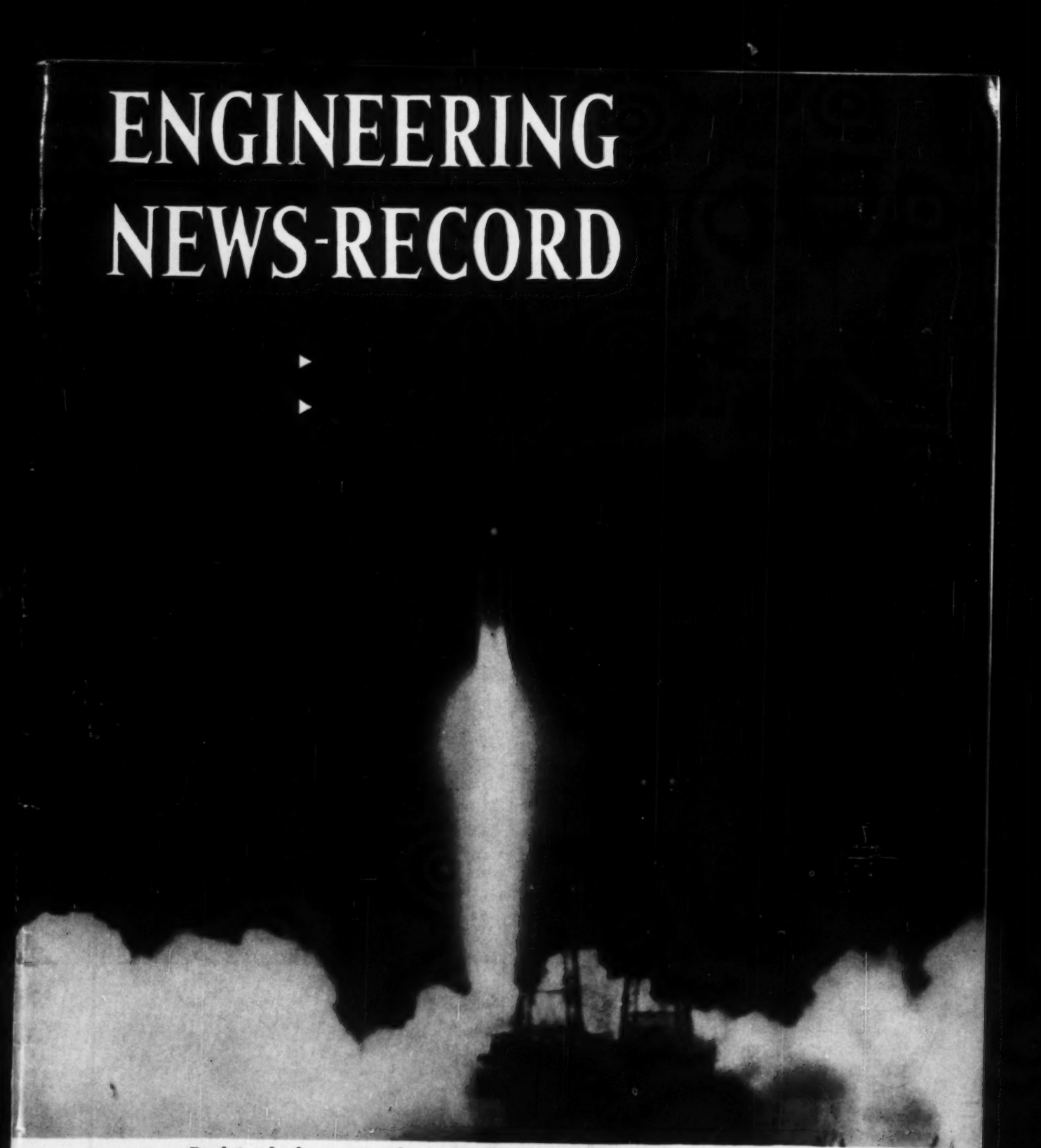
ENGINEERING NEWS-RECORD



Behind the missiles: Precision construction *pages 34, 40*

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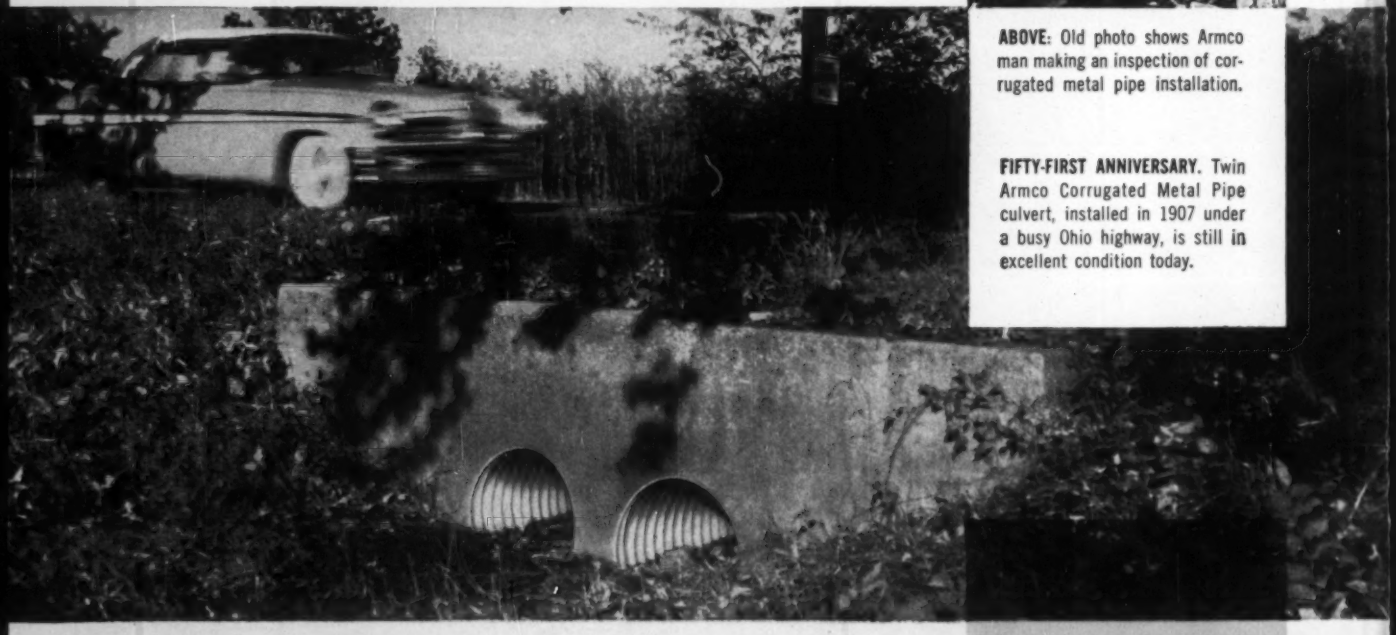
Used on the Nation's Highways Since 1906, Armco Drainage Products Offer You Proved Durability

Armco, Pioneer of Corrugated Metal Drainage Structures, Gives You Assurance of Low Cost Through Long Life

ABOVE: Old photo shows Armco man making an inspection of corrugated metal pipe installation.



FIFTY-FIRST ANNIVERSARY. Twin Armco Corrugated Metal Pipe culvert, installed in 1907 under a busy Ohio highway, is still in excellent condition today.

For the past half-century, Armco Corrugated Metal Drainage Products have been installed under highways all over the country. Many of these old structures are still giving good service today.

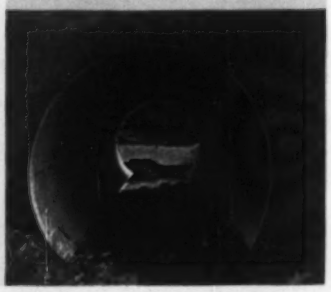
Having the advantage of the first Research Division in the steel industry, Armco started early in making field inspections and laboratory tests. These studies helped confirm the durability of Armco Products and aided in developing new ones.

Photos on this page typify the continuing research programs on the durability of Armco Products. To demonstrate their wide acceptance, many corrugated metal drainage products developed or originated by Armco are considered "standard" by highway engineers today.

Hundreds of Armco Sales Engineers, located in all sections of the country, are qualified to help you find an economical solution to drainage problems. And they can assist in expediting delivery of structures from one of the 55 Armco manufacturing plants.

More than 30 Armco Products are supplied for various highway, municipal, railway, and industrial applications. For specific data, write us. Armco Drainage & Metal Products, Inc., 3108 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

SMOOTH-FLO® Sewer Pipe, a new improved product, is designed to assure top flow capacity. It is a typical example of developments originated by Armco.



MULTI-PLATE® is typical of products developed by Armco that have become "standard" structures. This 1931 installation is still in fine shape.

ARMCO®

ARMCO CONSTRUCTION PRODUCTS

His Allis-Chalmers "Dozers" spearhead levee job

Sweetman Construction Co. is building a levee near Sioux Falls, South Dakota—moving nearly one million yards of earth to end costly spring flooding of the Sioux river. Supt. William Bruhn and his spread of Allis-Chalmers HD-16 tractor-dozers spearhead the job. Bill and his operators think highly of the HD-16's. After months of heavy dozing, the tractors maintained a perfect "stay-on-the-job" record.

William Bruhn, Supt.
Sweetman Construction Co.
Sioux Falls, South Dakota

Allis-Chalmers tractor-dozer grades fill on levee. With hydraulic-controlled steering, the big, sure-footed HD-16 handles easily in heaviest material.

148-hp HD-16's handle big-tractor jobs with ease

The two-mile Sioux Falls levee job involves straightening and deepening the river bed—actually shifting the channel three quarters of a mile. Nearly one million yards of earth will be moved to excavate the channel and build the embankment.

Dependable Allis-Chalmers HD-16 tractor-dozers are spreading scraper-hauled fill, heaping muck for the dragline, leveling haul routes—setting a fast pace for other machines wherever they work.

Hydraulic steering a big help

Operators like the way they handle—the sure "feel" of the controls. Hydraulic-controlled steering takes the hard work out of maneuvering, even in the toughest dozing.

The HD-16's big, 148-hp Allis-Chalmers diesel engine delivers plenty of torque to lug through on heavy dozing—lively performance under all job conditions.

Easy servicing pays dividends

Like all Allis-Chalmers crawler tractors, the HD-16 requires lubrication *only once every 1,000 hours* for truck wheels, idlers and support rollers. This means a bonus of hundreds of production hours—a feature that pays dividends on anybody's job.

See what this great tractor can do for you! Six models to fit your needs. 148-hp, all-gear drive, 150-hp with hydraulic torque converter. Bare weight is approximately 33,000 lb. Ask your Allis-Chalmers dealer to demonstrate on your job. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

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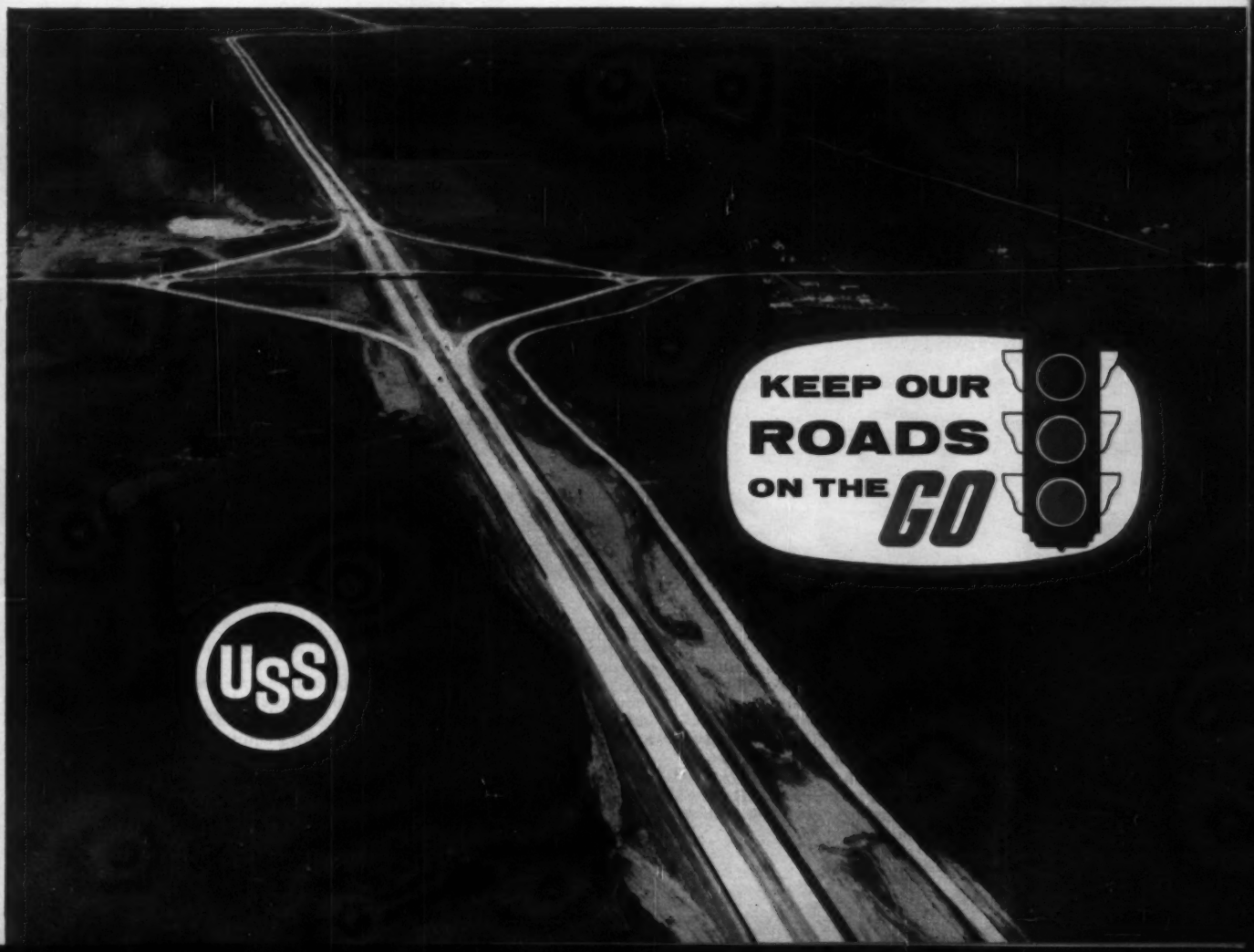
Iowa reports rapid progress on its 711-mile Interstate Highway program

By the end of this year, Iowa will have 66 miles of Interstate expressways open to traffic. The recent opening of a 45-mile section on Interstate Route 35 between Rider and Osceola represents the completion of one of the longest Interstate routes in the United States. In addition, 82 miles will be under contract for grading, 47.5 miles for paving, and 190 miles of final surveys and 42 miles of preliminary surveys will be completed in 1958.

The Interstate routes in Iowa have been carefully laid out with both present and future traffic loads in mind, and with full realization of the importance of Iowa's extensive farm-to-market road network already in existence. Numerous overpasses, some only a mile apart, and many strategically located interchanges will tie these vital roads into the Interstate System.

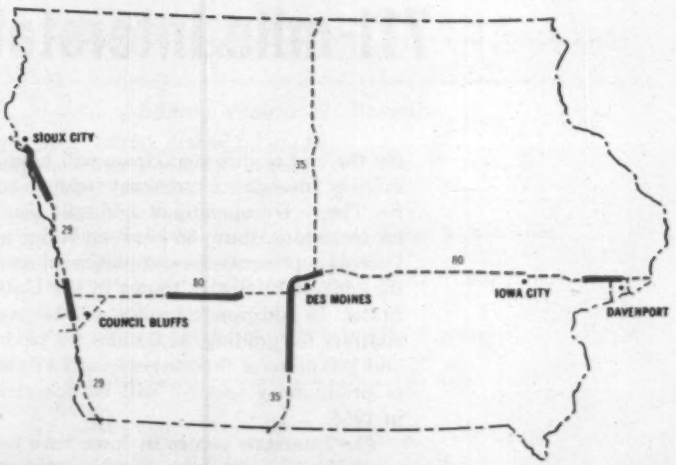
Iowa's total 711-mile Interstate Highway program will cost an estimated $478.77 million. The work is under the direction of Russell F. Lundy, Iowa Highway Commission Chairman, and John G. Butter, Chief Engineer.

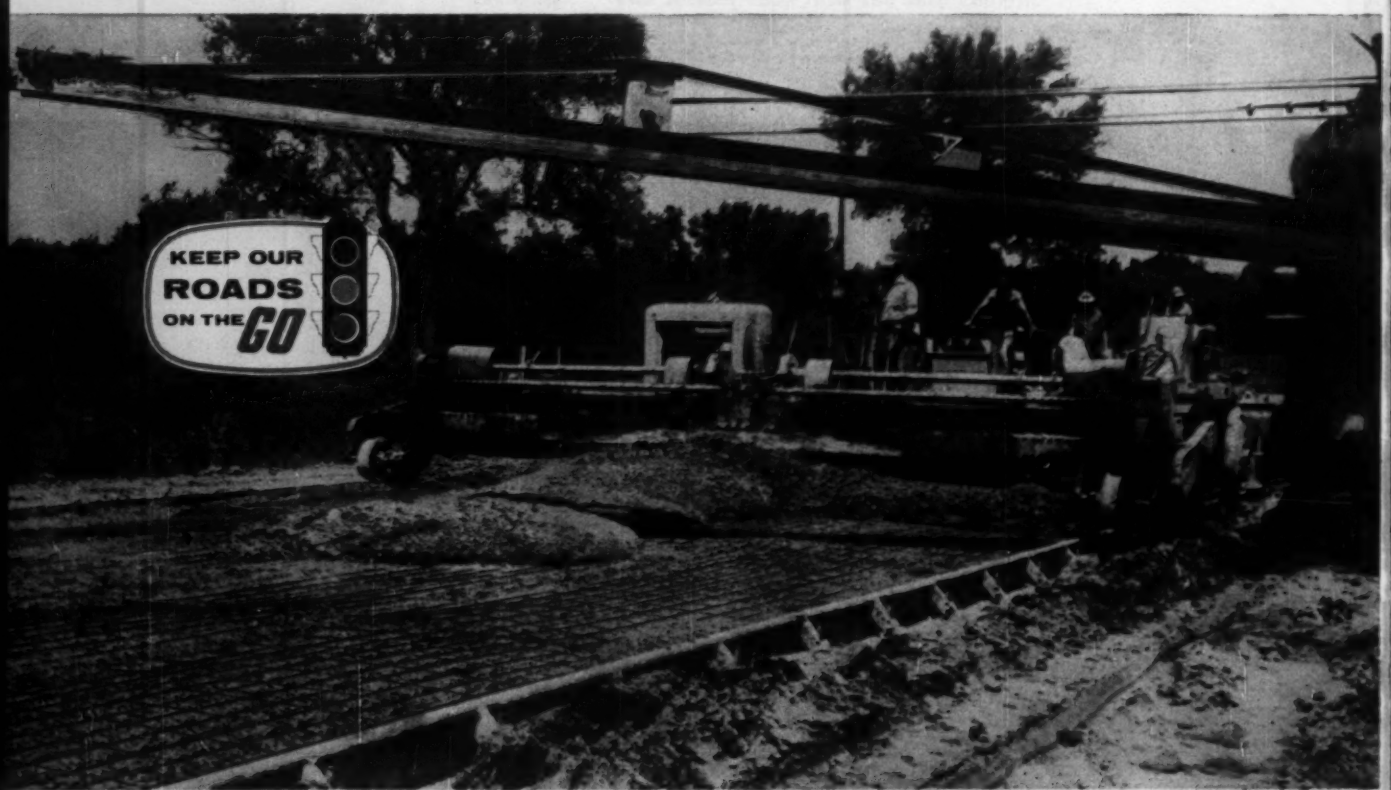
Interstate Highway 35 southwest of Des Moines, Iowa.



In every mile of Iowa's new expressways

Three Interstate Defense Highways will serve Iowa. Interstate Route 80 will run some 350 miles east to west across the state from Davenport on the Mississippi to Council Bluffs on the Missouri. Interstate Route 35—a relocation of US 69 and by-passing Des Moines—will run 240 miles south from the Minnesota border to the Missouri state line. (A freeway to be constructed through Des Moines will link Routes 35 and 80 to provide better access and egress from the downtown loop areas of the state capital.) On the western border of Iowa, Interstate Route 39—a relocation of US 75—will run northwest along the Missouri River from Hamburg through Council Bluffs to the South Dakota border. Some 20 miles of this expressway between Council Bluffs and Missouri Valley as well as a 2-mile section near Sioux City are already open to traffic.





Reinforced with steel wire fabric, the concrete roadways on Interstate Route 35 were paved at the rate of one-half mile per day despite a very wet summer season. USS *American* Welded Wire Fabric, made of high-quality cold drawn wire, permits the construction of pavement slabs up to 100 feet long that provide a smoother riding surface and require a minimum of maintenance because they offer high resistance to the stresses and strains of heavy traffic, soil movement and variations in temperature. Additional reduction in upkeep costs results from the use of USS *American* Transverse Road Joint Assemblies which permanently interlock slab ends and maintain slab alignment.

Stronger, tougher, longer lasting USS High Strength Steels. USS *Cor-Ten,* USS *Man-Ten* and USS *Tri-Ten* brands—and super-strong USS *"T-1"* Constructional Alloy Steel—by adding stamina to the vital parts of paving and earth-moving equipment are important factors in helping to reduce "down time" and in keeping maintenance costs low. The ability of these steels to absorb shock loading, high stress and abrasive wear makes it possible to work equipment to capacity and to keep it on the job under severe conditions. When the use of wire rope is called for, as in shovels, cranes, derricks and pile drivers, USS *American Tiger Brand* Wire Rope provides the strength, toughness, flexibility and wear resistance that ensure long life and freedom from trouble.

Steel saves time, cuts cost, adds life

Steel carries Interstate Route 35 across the Raccoon River. These twin spans, a combination of continuous steel beam and deck plate girder construction, are typical of three stream crossings on this north-south expressway. It is expected that Iowa's Interstate System will utilize 266 tons of structural steel and reinforcing steel per million dollars of construction costs. USS Carbon Structural Steel Shapes and Plates are available for the fast, low-cost construction of every type bridge, overpass, and elevated expressway. They can also be furnished in USS High Strength Steels or USS *"T-1"* Steel whose greater strength permits drastic reductions in the weight of structural members and results in worthwhile savings in the cost and size of foundation structures.

Easily driven steel sheet piling expedites the construction of bridge abutments. Available in straight web, arch web and Z-type sections, USS Steel Sheet Piling interlocks to form a continuous, earth-tight and virtually watertight wall for permanent or temporary abutments, retaining walls, cofferdams and building foundations.

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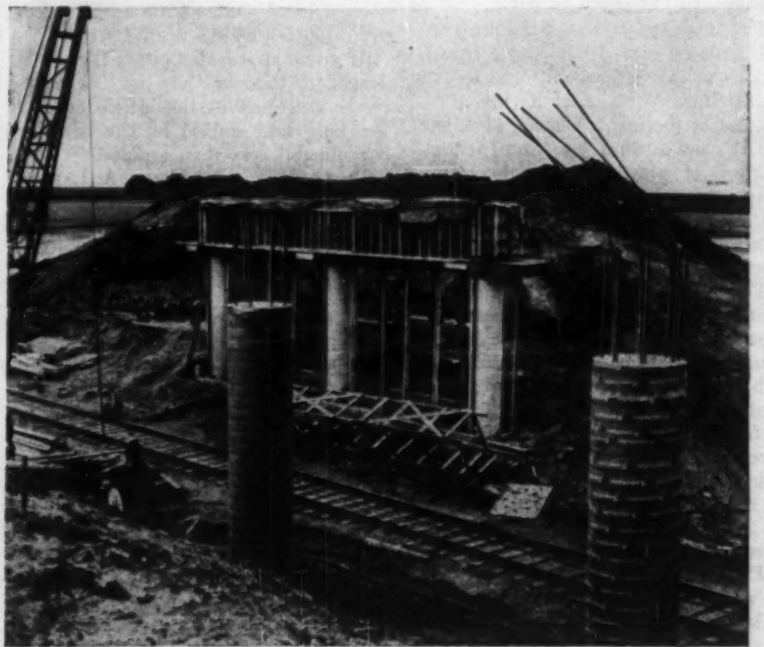

Sturdy backbone of steel reinforces piers on this railroad crossing near Des Moines. More than 3½ million tons of concrete reinforcing bars will be used to ensure strength and permanence in the piers, bridge slabs, abutments and culverts of the Interstate Highway System. Much of this tonnage will be USS *Di-Lok* Reinforcing Bars. Their outstanding feature is a continuous, diamond-shaped interlocked ribbing that ensures a tight, positive anchorage in the concrete and which reduces cracking to the minimum and makes shorter splices possible.

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Reader Comment

Beam Trading: Neat Trick But . . .

► Your story about the replacement of the damaged beam at the Chase Manhattan project (ENR, Oct 9, p 30) was very interesting and instructive.

On page 32 you state that "strain-gauge readings showed there was still some load left in the damaged beam." I would appreciate learning how these readings were taken in view of:

a) the considerable distortion suffered by the beam . . .

b) readjustment and relaxation of the prestress in the adjoining members and . . .

c) the fact that a strain guage applied to an already loaded member will only give data with respect to an arbitrary value.

N. Rabinowitz
Project Engineer,
Western Union Telegraph Co.
New York, N. Y.

► The article "Replacing a Beam in a Loaded, Prestressed Steel Frame" describes a very neat trick in construction procedure. So neat that I still have not been able to figure out how it was done.

The damaged beam section cut out and replaced was 36 ft long. It was packed in dry ice which vaporizes at minus 70F. With steel having a coefficient of thermal expansion of 0.000, 006.5F, and assuming an ambient temperature of plus 60F, the theoretical temperature shrinkage of the 36-ft-long beam would be 0.36 in. The reported shrinkage of 0.25 in. is thus quite reasonable.

The overall length of the cross lot strut from wall to wall of the excavation appears from the drawing to be 140 ft. Temporary shoring purportedly retained a thrust of 50 tons in a portion of the strut which scales as having a length of 60 ft. The remaining 80 ft must have been unstressed at the time the new beam was introduced. A thrust of 50 tons on a 24WF160 beam, which has a cross sectional area of 47 sq. in., corresponds to a stress of 2,100 psi.

The temperature shrinkage of 0.25 in. which was locked into the strut by wedging must first raise the 80-ft unstressed length of strut to a stress level of 2,100 psi before it will have any effect outside this length. With structural steel having a modulus of elasticity of 29,000,000 psi this will use up 2,100 x 80 x 12 (in./ft.)/29,000,000 or 0.07 in. leaving 0.18 in. available to produce strain in the entire length of the cross lot strut.

The additional stress increment then will be 0.18 x 29,000,000/140 x 12 or 3,100 psi. The final stress in the strut then should be 5,200 psi.

With its area of 47 sq in. the 24WF-160 beam should be carrying a total thrust of 245,000 lb., or 122 tons, even considering the excavation walls as unyielding. This would indicate a gain in thrust of 72 tons for the strut over what it carried in its damaged condition. The article gives the final thrust as 347 tons, or a gain of 297 tons over the damaged condition.

The article further shows that immediately after the accident to strut #3, parallel struts #1, #2, #4, #5, and #6 carried respectively 506, 595, 506, 504, and 394 tons each, or an aggregate of 2,505 tons.

After the damaged portion of #3 had been replaced and restressed, this total dropped to an aggregate of 2,439 tons for a reduction of 66 tons. This is very close to the computed gain of 72 tons for strut #3 and at considerable variance with a gain of 297 tons indicated by figures in the article.

It would appear that either the actual procedure followed has not been correctly described in the article or that the final load carried by the beam is considerably less than reported.

Marvin A. Larson
Structural Engineer
San Francisco, Calif.

. . . Engineers Reply

► In answer to Messrs. Rabinowitz and Larson's letters about replacement of a damaged beam in the prestressed steel frame at the Chase Manhattan Bank foundation project (ENR Oct 9, p. 30) we offer the following supplementary information and procedures:

• **Strain readings** – Initial strain-gauge readings at zero stress were established

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

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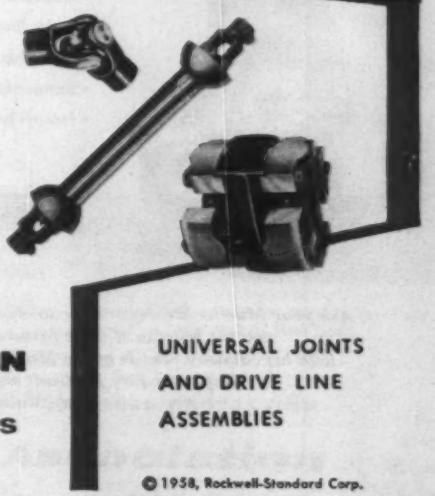

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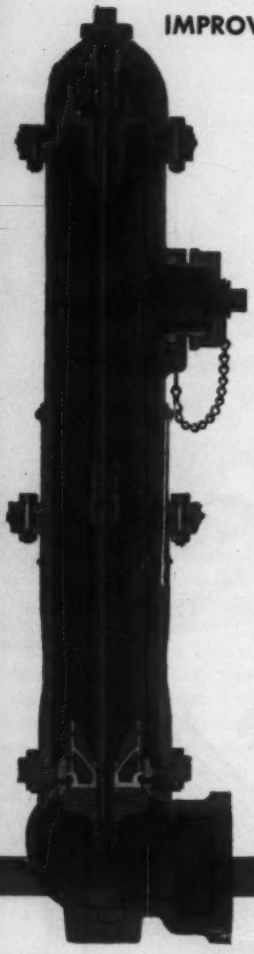

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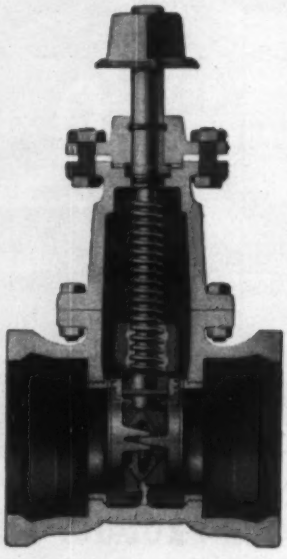

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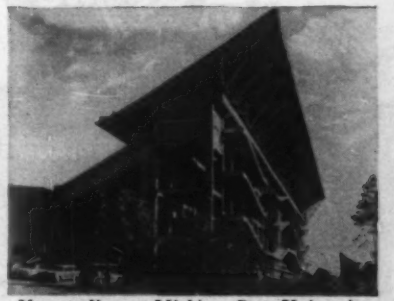

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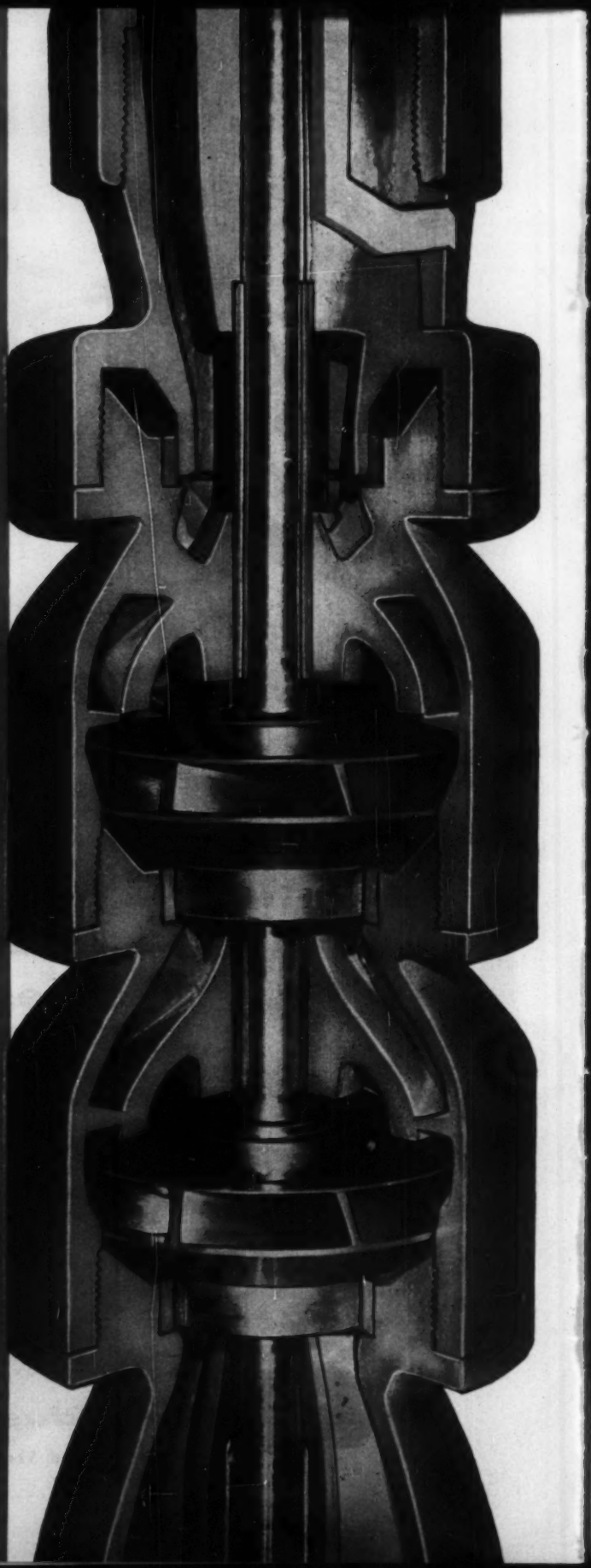

WHEN AMERICA BUILDS FOR ECONOMY . . . IT BUILDS WITH CONCRETE

Design: Bridge Section, Ft. Worth District, Texas Highway Department
Contractors: Austin Bridge Company, Dallas, Texas and Worth Construction Company, Ft. Worth, Texas

FOUR-LEVEL INTERCHANGE AT FORT WORTH . . .

reinforced concrete bridges provide needed clearances with minimum over-all height

To meet Interstate standards for this direct-connect interchange in a restricted right-of-way, Texas highway engineers chose the shallowest possible construction. (Minimum vertical clearance for each deck is 14 ft. 6 in.) They used 2,945 linear feet of reinforced concrete bridges, of haunched slab design. These structures with their clean lines are attractive as well as efficient.

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A national organization to improve and extend the uses of concrete

FOR STRUCTURES... MODERN **concrete**

The continuous reinforced concrete slab guaranteed minimum overall height with required vertical clearance for lower roadway levels.

for all prestressed members, before loads were jacked into the system. Accuracy of strain-gauge readings was initially checked by use of the pressure gauges on the jacks and by measurement of the elastic shortening of the steel members. At least three strain-gauge reading stations were established on each cross lot and longitudinal strut. At each reading station a total of five sets of reading points were installed: one at the web and four at the edges of the flanges, thus providing stress readings for the entire cross-section. Since strain reading points were located on the strut north and south of the damaged beam, strain-gauge readings taken after the accident indicated that the 40-ft. northerly section was carrying approximately 50 tons of load and further that the 80-ft-long section of the strut south of the damaged beam still carried approximately 259 tons of stress. (Indications were that the damaged section itself still carried approximately 32 tons, which was released with accompanying movements of adjacent members during the beam replacement.)

The sections of the strut south of the damage were able to continue to carry direct load because of the unusually heavy lacing system which was designed as vertical trusses.

• **Coverplates**—Information which Mr. Larson did not have in making this detailed analysis of the procedure is that the cross lot strut actually had cover plates installed on the 160-lb rolled section, so that the cross-sectional area was 75 sq in. Mr. Larson assumed that the southerly 80-ft. carried no load whereas readings indicated a load of 259 tons after the accident. When the damaged beam section was removed the 259 ton stress in the south section was not relieved because of the heavy lacing and temporary shoring, but the 50 ton load on the north section dropped to zero.

While Mr. Larson's calculation on beam shrinkage vs. temperature change is quite correct, the practical limitations of making readings on the beam packed in dry ice prevented control by temperature readings. Control during the replacement of the damaged member was actually carried out by measuring the temperature shortening of the ice-packed member, with total shortening amounting to ¼ in. maximum previous to wedging.

Based on the stress-temperature relationship ($0.0000065Lt = PL/AE$), a shortening of 0.295 in. would provide a direct load of 347 tons in the strut after the replacement of the damaged section and allowance for the residual stress in the 80-ft-long section to the south. The 347 tons was the total load indicated by the Whitmore gauge readings at the completion of repairs.

Actually, since the measured temperature shortening was 0.250 in., we felt the readings were reasonably accurate and that the difference between actual and theoretical measurements amounting to 0.045 in. could be accounted for by inequalities in the driving of the wedges and normal working tolerances in members of the prestressed system.

ROBERT C. JOHNSTON
NICHOLAS W. KOZIAKIN
Design Engineers
Moran, Proctor, Mueser & Ruthledge
New York, N. Y.

Cost of Field Fasteners

SIR—"Steel Fastener Costs Compared" (ENR Sept. 18, p. 82) was particularly interesting to me because I worked with Henry J. Stetina, regional engineer of the American Institute of Steel Construction, on a similar cost analysis.

Mr. Stetina's data covers ribbed bolts and common bolts in addition to the other fasteners. Two sizes of fasteners also are considered, as this chart shows.

Cost of Field Fasteners

¾ x 1 in. Grip

	MAT'L	DIRECT LABOR	TOTAL
RIVET	0.06	1.14	1.20
RIBBED BOLT	0.29	0.75	1.04
HIGH-STRENGTH BOLT	0.23	0.56	0.79
UNFINISHED BOLT (RIVET EQUIV.)	0.14 0.21	0.27 0.41	0.41 0.62
5/16" FILLET WELD (RIVET EQUIV.)	0.01	0.45	0.46

⅞ x 1 in. Grip

	MAT'L	DIRECT LABOR	TOTAL
RIVET	0.08	1.14	1.22
RIBBED BOLT	0.39	0.75	1.14
HIGH-STRENGTH BOLT	0.40	0.56	0.96
UNFINISHED BOLT (RIVET EQUIV.)	0.21 0.32	0.27 0.41	0.48 0.73
5/16" FILLET WELD (RIVET EQUIV.)	0.01	0.63	0.64

Cost data for Stetina's analysis were taken from several steel erector's records in the Philadelphia and Baltimore area in the spring of 1958.

While the actual cost of rivets and high-strength bolts differs in the two comparisons, the edge is in favor of high-strength bolts in both cases. Most noteworthy is the data showing that where common bolts can be used, even after adjusting figures to give rivet-equivalent strength, they are still the most economical fasteners for steel with hole connections.

A. J. JULICHER
American Institute of Steel Construction,
New York, N. Y.

Development in Iran

SIR—There are a few minor errors of fact in your excellent article, Construction Spotlight Shifts to Iran, (ENR Sept. 25, p 50) which you may wish to correct.

Dez Dam is to be located at the entrance to the river canyon and not three miles below.

The dam will provide full irrigation requirements for 360,000 acres and not 425,000 acres.

George Byrne and not Burn is acting project manager for Morrison-Knudsen International.

Russel E. McClure and not A. Lee Smith is in charge of Khuzeston Development Service for the Development and Resources Corp.

The sugar cane development will cover 25,000 acres and not 100,000.

The power lines are of 132 and 220 kv instead of kw.

The survey work for the 220 kv line, which the article said would be finished in July, 1959, has now been completed.

DAVID LILIENTHAL, JR.
Development and Resources Corp.
New York, N. Y

For Your Calendar . . .

Highway Research Board, Sheraton-Park, Washington, D. C., Jan. 5-9.

National Concrete Masonry Association, 1959 convention and biennial Concrete Industries, Exposition, Public Auditorium, Cleveland, Ohio, Jan. 12-15.

Building Research Institute, "Noise Control in Buildings," New Yorker Hotel, New York City, Jan. 14-15.

Canadian Construction Association, Queen Elizabeth, Montreal, Canada, Jan. 18-22.

National Association of Home Builders, Hotel Conrad Hilton, Sherman Hotel, and Chicago Coliseum, Chicago, Ill., Jan. 18-22.

American Road Builders Association, Materials and Services Division, Dallas Memorial Auditorium, Dallas, Texas, Jan. 19-22.

Associated General Contractors of America, Inc., Hotel Americana, Miami Beach, Fla., Jan. 19-23.

Associated Equipment Distributors, Hotel Conrad Hilton, Chicago, Ill., Jan. 25-29.

Association of Asphalt Paving Technologists, Brown Palace, Denver, Colo., Jan. 26-28.

Society of Plastics Engineers, 15th annual technical conference, Hotel Commodore, New York City, Jan. 27-29.

American Society of Heating and Air Conditioning Engineers, Convention Hall, Philadelphia, Pa. Jan. 26-29.

National Crushed Stone Association, Americana Hotel, Miami Beach, Fla., Jan. 26-30.

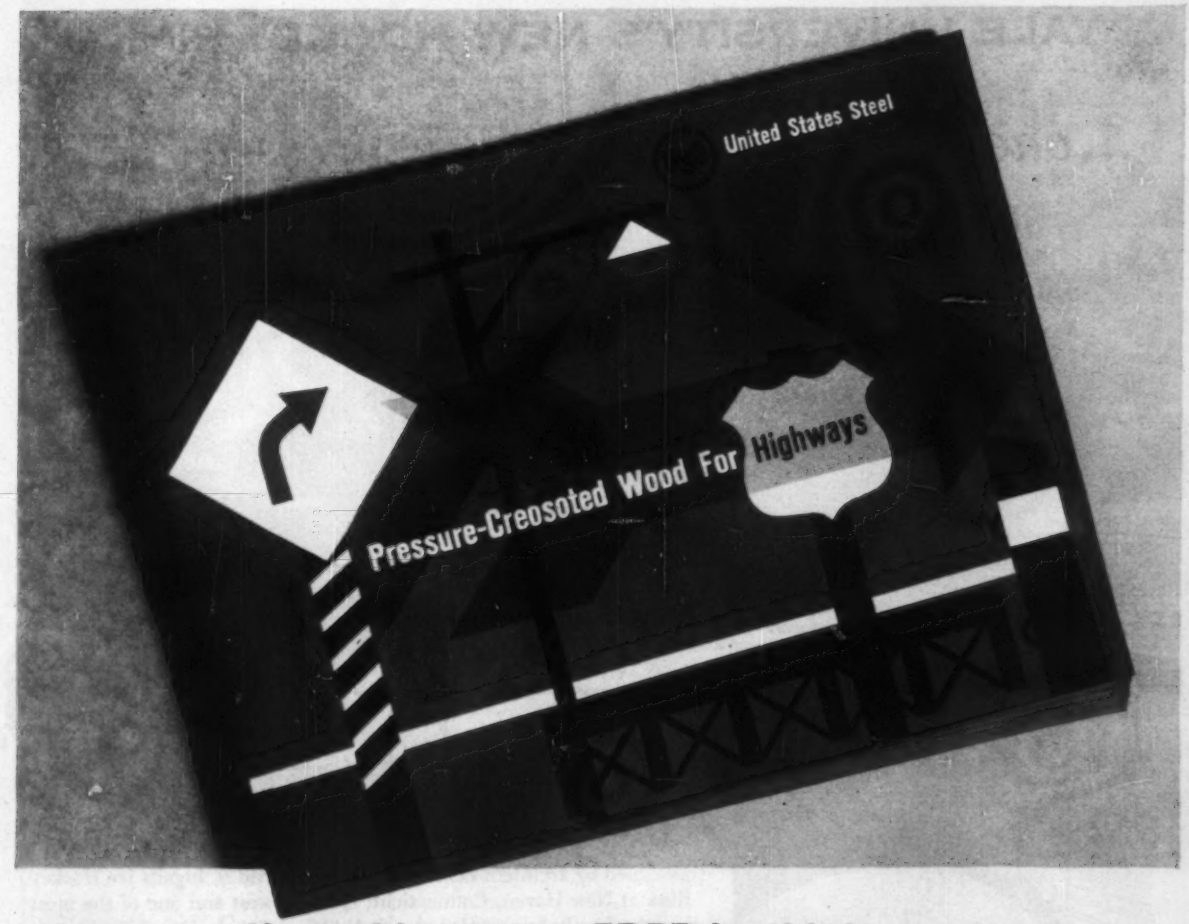
National Bituminous Concrete Association, 4th annual meeting, Americana Hotel, Miami Beach, Fla., Feb. 2-6.

Mason Contractors Association of America, ninth annual convention and 1959 show, Chase-Park Plaza Hotels, St. Louis, Mo., Feb. 15-18.

National Ready Mixed Concrete Association, Roosevelt Hotel, New Orleans, La., Feb. 15-19.

American Society for Public Administration, Statler-Hilton, Washington, D. C. Mar. 16-18.

National Association of Corrosion Engineering, Hotel Sherman, Chicago, Ill., Mar. 16-20.



Yours for the asking—new FREE booklet, "Pressure-Creosoted Wood for Highways"

United States Steel has just brought out a new 16-page illustrated booklet about pressure-creosoted wood for highways. It shows how pressure-creosoted wood lengthens the life of guardrail posts, piling, bridge timbers, sign posts and other structures.

You can learn the many advantages of pressure-creosoting: why pressure-creosoted wood lasts so long in or out of water; the proper methods for specifying posts and lumber; and how to make sure the wood you are getting is the right wood for the job.

The booklet contains tables that show the recommended treatment for different kinds of wood. If you are interested in the use of wood in highway applications, you will find this booklet a valuable addition to your file of information. Sales Offices in Pittsburgh, New York, Chicago, Salt Lake City and Fairfield, Alabama.

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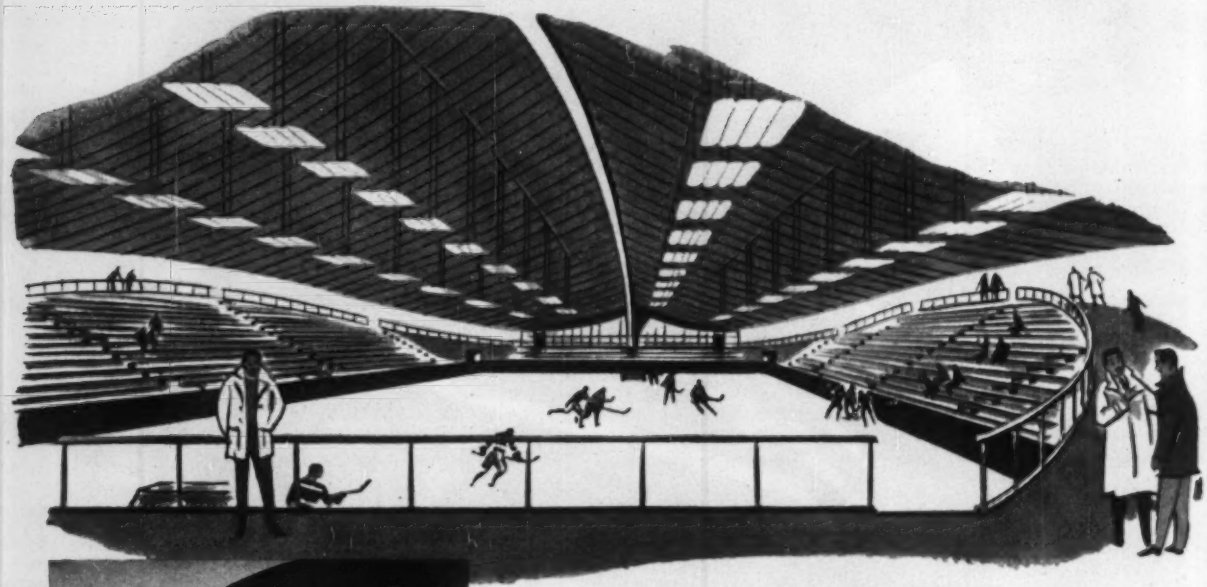

Architect: Eero Saarinen and Associates, Bloomfield Hills, Michigan
Consulting Engineers: Severud-Elstad-Krueger, New York City
Contractor: George B. H. Macomber, Boston and New Haven

Designed by architect Eero Saarinen, the David S. Ingalls Ice Hockey Rink at New Haven, Connecticut, is the newest and one of the most breathtakingly beautiful suspended roof structures in existence.

The rink is formed by two tremendous lyre-shaped compression arcs resting on their sides, with a great, upright reinforced-concrete parabolic arch serving as the roof's backbone. The two compression arcs serve a dual purpose as wall and buttress.

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Roebling's interest and constant activity in all phases of the suspended roof principle stem from its long and invaluable experience in *all phases of steel in tension* in all kinds of structures: bridges, ski lifts, conveying systems and guyed towers are some of the fields in which Roebling has pioneered with significant success. We will be pleased, at any time, to make available to you our findings and discuss with you our activities in this field . . . a field that gives every evidence of becoming one of the most important construction modes of all times. Write Bridge Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

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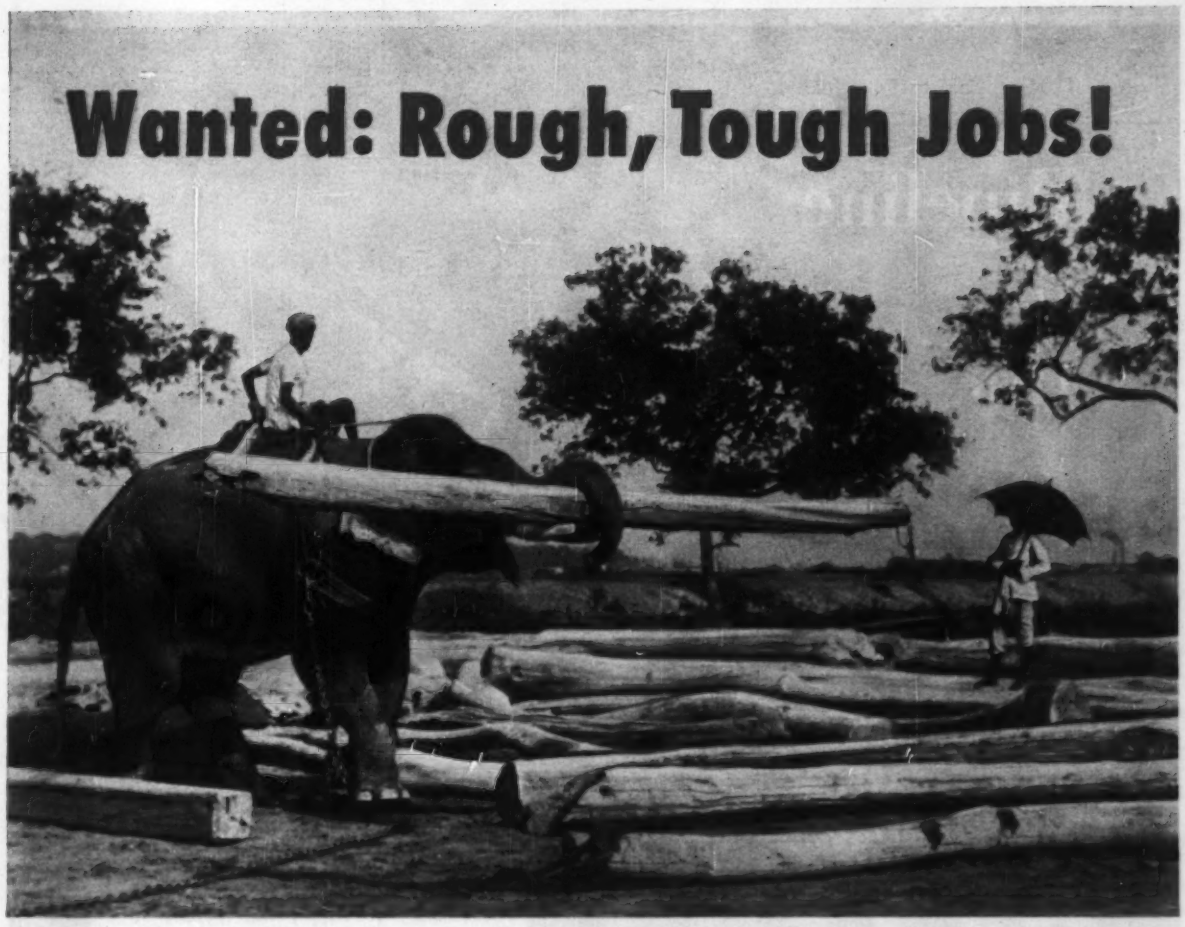

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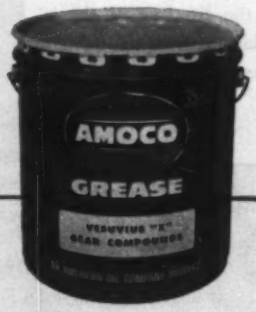

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CONTENTS

NATIONAL AFFAIRS

How Should We Plan Cities..... 21
Columbia Basin Plan: What It Means..... 23
Museum Has Exposed Steel Frame..... 24
Teamsters Eyeing Office Workers?..... 24
First English Limited-Access Road Opened..... 24
World's Widest Tunnel Opens..... 25
Chicago Exposition Hall Bid..... 26
Oklahoma Uproar Over Road Contracts..... 26
Michigan Abbey—Last of Its Kind?..... 28
New York City's School Costs Down..... 28

FEATURES

Construction Behind the Missiles..... 34
An Inside Look at Complex Missile Towers..... 40
Sanitary Fill Makes the Grade as Plant Site..... 44

INTERNATIONAL

USSR-Norway Team Up on Hydro Project..... 53
Kaiser Gets Brazil Steel Plant Job..... 53

NEW PRODUCTS

Hydraulic Rig—Lots of Shake, Little Rattle..... 55
Vibratory Compactors Set on Trailer..... 55

MEN AND JOBS

H. W. Hunt: Editor of Civil Engineering..... 61

BUSINESS AND FINANCE

Housing Outlook: Some Big Ifs..... 81
Business Spending Plans Are Up..... 82
Alaskan Market Gets Stronger..... 83
Tollroad Creates New Wealth in Indiana..... 83
Machinery Orders Climb 7%..... 83

LABOR

Target: Better Labor Relations..... 85
Court Cracks Down on Hoffa..... 86
Is an Engineer a Supervisor?..... 86
Threats of Secession Continue..... 88

Reader Comment ... 6 Materials Prices 67
Calendar ..... 12 Construction Reports. 68
Washington Observer 19 Statistics, Indexes .. 80
Unit Prices ..... 62 Editorials 100

Back issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Semi-annual indexes will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in Industrial Arts Index and Engineering Index.*

THE CONSTRUCTION WEEK

LESSONS FROM CHICAGO'S FIRE—Chances are a coroner's inquest investigating Chicago's disastrous school fire (ENR Dec. 11, p. 22) will lead to these jury recommendations: Equip all schools with sprinkler systems; place fire alarm boxes in front of all schools; install more fire doors.

CHANGES AHEAD FOR STEEL—Expect revisions in design specifications that may make steel construction less expensive. Among the changes: The American Institute of Steel Construction will issue a specification and design manual next month for plastic design of one-story structures. Also specs will soon have to reflect results of Lehigh University tests showing that deeper, thinner webs can be used for plate girders. Revisions permitting fewer high-strength bolts in structural connections are also in the offing.

BIGGEST FLOATING "JOB SITE"—Off Los Angeles this week Hyperion Constructors are using the world's biggest mobile offshore platform to lay 5½ miles of 4-ton-per-ft concrete pipe—the effluent outfall from LA's Hyperion Sewage Treatment Plant.

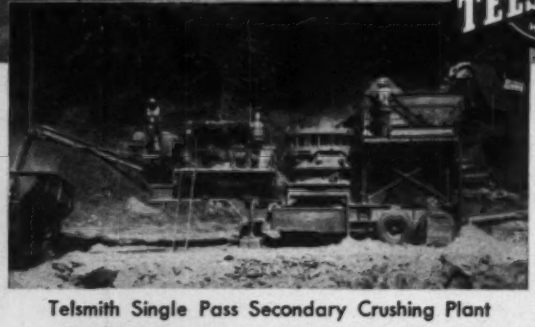
ALUMINUM BRIDGE LOOKS GOOD—Look for Bureau of Public Roads approval if state highway departments want to try out the light-gage aluminum bridge developed by Fairchild Engine and Airplane Corp. and several aluminum producers. The design went through strenuous tests at Lehigh University (ENR Sept. 4, p. 25), and BPR engineers like the results. BPR probably will write design criteria for this type of bridge.

MORE COAL BY THE GALLON—Construction will begin in the spring on a second long-distance pipeline for carrying coal in slurry. The Youngstown Coal Pipeline Co. will spend about $10 million to build a pipeline to haul coal 33 miles from East Liverpool, on the Ohio River, to steel mills in Youngstown, Ohio.

ANOTHER MODEL CODE—Competition between building officials organizations is bound to become stiffer with the issuance this week of a fourth model code. The new one is the Modern Standard Building Code developed by the Midwest Conference of Building Officials. Copies of the 490-page volume can be purchased for $6 apiece from the conference's Executive Director, 205 W. Wacker Drive, Chicago 6, Ill.

TRY, TRY AGAIN—San Diego officials are studying the third plan in the last seven years for a comprehensive metropolitan sewerage system. Earlier plans fell through because of objections to locations of the treatment plant. The new proposal changes the plant site again, and if the city likes the plan it will put it before the voters—and hope for the best.

"this Telsmith portable plant has given us complete satisfaction in operation and production"



Telsmith Single Pass Secondary Crushing Plant with 489-S Gyrasphere Crusher and 4-ft. x 8-ft. double deck screen.

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Telsmith 10-yd. capacity Portable Surge Bin with 36-in. discharge conveyor.

On airport job at Charleston, W. Va. —Telsmith Portable plant of Haynes Construction Co. of Bluefield, W. Va.

Mr. Ralph Lynch, Superintendent, in charge of crushing operations (see picture at left) points with pardonable pride to this smooth running, large capacity Telsmith portable crushing plant. He reported a capacity of 150 to 185 tons per hour making minus 2½-inch material. He says, "this Telsmith portable plant has given us complete satisfaction in operation and production."

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WASHINGTON OBSERVER

- **Democrats put the pressure on for more construction spending**
- **Breeder reactor gets go-ahead**
- **Jet runways: Asphalt move coming**

● **On practically every federal program involving construction, the Democrats want more money spent.** This came through loud and clear during the recent meeting of the Democratic Advisory Council—which includes bigwigs from all sections of the party.

As usual, the Democrats who run Congress say they'll make up their minds when it comes to putting all these recommendations into law. But this underscores the major point.

The pressure is to spend more. The list of construction programs is really impressive—and each was touched on by the top Democrats.

Defense spending is on the top of the list—and it's one area in which President Eisenhower may have to take more money than he wants.

All kinds of public works programs are favored: The self-financing measure for Tennessee Valley Authority, stepped-up atomic power, more money for starting new hydro projects, school construction, increased funds and guarantees across-the-board in housing and urban renewal, expansion of hospital construction, a community facilities aid program, a $500 million program for aid to economically distressed areas, a real increase in spending on airports, a Columbia River development authority, more money for Rural Electrification Administration.

One omission: Highways. Apparently the spending Democrats aren't for any increased highway spending, and aren't making a big issue of raising more tax revenues to make it pay-as-you-go.

Working all this into legislation is something else again. But you can count on this kind of continuing pressure on the more conservative Congressional leaders from the New Deal-Fair Deal wing that was strengthened by the election victories.

—

● **Legal obstacles to construction of the fast breeder atomic reactor near Detroit are all but swept away.** The Atomic Energy Commission has overruled labor union objections that the big, advanced reactor had not been proved safe for operation close to a major city. The decision granting the Power Reactor Development Co. a construction permit is tentative, but is expected to be made final in a few weeks.

One point to remember—The AEC decision again puts industry on notice that granting of a construction permit does not guarantee that the commission will ever allow operation of the reactor if safety is in doubt.

—

● **The asphalt industry is keeping a sharp eye on another airport runway situation where portland cement concrete is specified.** That's the new Chantilly Airport for Washington, D. C., under crash-program construction to take jets as soon as possible. Civil Aeronautics Administration handles this all-federal project—and its consulting engineers specified all-concrete. Bids on two runways are to be opened this week, and the asphalt people may make their public move then, by talking up cost-savings possible with asphalt.

Bids on concrete could run to $10 million or more; asphalt experts claim asphalt could save the taxpayers almost half of this.

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PLANNER: Build the city, don't just talk about it.

How Should We Plan Our Cities?

Social scientists, architects, engineers and builders came together last week to talk about "human needs in cities of the future."

What developed may not exactly have met "human needs," but it did, at least, begin to meet the need for concentrated, applied thinking about one of the U. S.'s fastest-growing and most perplexing problems: The city.

The occasion was the National Construction Industry Conference sponsored by the Armour Research Foundation of Illinois Institute of Technology. Co-sponsors were the American Institute of Architects, American Society of Civil Engineers, Associated General Contractors of America and Building Research Institute. About 300 attended the two-day gathering.

The social scientists set forth a few things a city might be planned for—and against; a few things people need, and a few things they can do without.

The architects appeared to agree that "only architects can bring order to civic design." But they largely ignored the specific human needs in the city outlined for them by the sociologists. To a man, they appeared to see the automobile as the real villain.

The engineers did not seem to have been there the day before to hear the sociologists challenge the city-builders to build for people. They talked rather about specific buildings and building types, covering a remarkable number both in the U. S. and abroad.

Finally, came the contractors. They admittedly hadn't heard the sociologists. But they enlivened the program with a colorful challenge of their own to both architects and engineers: "While you're designing those new shapes, try to figure out how to build 'em."

And at the very end a city planner put the conference back on the track. Meet human needs in the cities, he said, by doing the best you can for the future with what you have now.

Here's the way the conference went:

1. The Social Scientists

President John Rettaliata of Illinois Institute of Technology put the problem in perspective in his welcoming remarks: 51% of the U. S. population lives in metropolitan areas now; 61% (or 150 million people) will be in metropolitan areas in 1975.

What will these people want from the cities? They'll want living space, and they'll want accessibility—two mutually conflicting needs, said A. H. Hawley, chairman of the sociology department at the University of Michigan. They'll want low-cost public transportation, and recreation facilities. And they'll apparently move about to fill their changing needs. Mr. Hawley said that since 1950 some 11% of the urban population has moved each year without leaving the metropolitan area.

Jane Jacobs, an associate editor of ARCHITECTURAL FORUM who is on leave with a Rockefeller grant to write a book on cities, affectionately called the city an "awesome, interlocked collection of plans." She urged the planners to "explore the complex organization and order of the city" for guidance.

Mrs. Jacobs bemoaned the city planner's contempt for the plans of the city's people. City planning and city designing are lost arts, she said. (She was dubbed "Calamity Jane" by a later speaker.)

Dr. Karl A. Menninger, noted physician and psychiatrist from Topeka, Kan., spoke about constructing for destructive people. "People like to knock things down," he said, "destructiveness is instinctive."

Bowling alleys and shooting galleries were the suggested outlets for the city-dweller's destructive urges.

Dr. Menninger's serious plea was for the city planner to provide somehow for the human's aggressive needs, to make better preparation for his leisure time.

John E. Burchard, originally an architectural engineer and now dean of MIT's School of Humanities and Social Studies, said a good city must meet all the tastes of all the people in it.

His own tastes: beauty and memories.

This, he said, a city must offer:

- Opportunity for thinking persons to meet.
- Privacy.
- Cultural opportunity.

(*Continued on page 22*)

Subscribers, Please Note

Since both holidays, Christmas and New Year's coincide with Engineering News-Record's Thursday publication date, the December 25 issue will contain a special group of features, and no issue will be published on January 1.

Coming in ENR's Christmas issue:

- **What Price Colored Buildings?**
- **Outlook for Construction Legislation in Congress.**
- **A 20-page Construction Cost and Estimating Guide.**
- **What the Trends in Wage Bargaining Mean.**

Although there will be no January 1 issue, subscribers will nevertheless receive their full complement of fifty-two weekly issues in 1959 because it is a year of fifty-three Thursdays.

- Lower types of entertainment.
- Variety of neighborhoods.
- Places to play.
- Safety from physical harm.
- Room for nature.
- Beauty.

And, Dean Burchard said, the city needs all these at a permissive price in money, time and effort.

2. The Architects

"Only architects can bring order to civic design," according to Paul M. Rudolph, chairman of Yale's department of architecture. He blamed present chaos on the fact that "we have abdicated our control."

He said today's problems are difficult because of the "new scale" of our building and he raised that bugaboo that was to worry all the architects who followed him—the automobile and its relationship to buildings.

Walter A. Netsch, Jr.—the very young and very erudite partner in the big architect-engineering firm of Skidmore, Owings & Merrill of Chicago—also spoke of the needs of the city, which he defined as: basic wants, amenities, and ideals.

We must establish an urban form that recognizes the amenities and the ideals, said Mr. Netsch, for to stick to the basic wants alone is to deny the needs of the city.

William L. Pereira, fresh from the one-time partnership of Pereira & Luckman, brought discussion down to earth —the red earth of La Jolla, Calif., where he is planning a new university city for the University of California.

Louis I. Kahn, Philadelphia architect, wound up for the architects with ways to beat the auto problem.

Zone streets for movement; separate the staccato motion of buses from the smooth-flowing movement of autos, he suggested. Design streets as streams, with provision for docking.

Then, having handled the architecture of movement—having brought the auto to within walking distance of its destination in the city—concentrate on "the architecture of stopping." This, Mr. Kahn said, is the problem of terminating vehicular movement at the gateway to the city's building cores.

Mr. Kahn showed his sketches of buildings clustered in great rings, with autos tucked away in garages beneath them and a great open area within. These he likened to the walled cities of the past. Defense of structure against indiscriminate movement, he called it.

Philip Will, Jr., an AIA vice president and member of the firm of Perkins & Will of Chicago, fired the last arrow for the architects. City planning, he said, has been given over too much to the highway engineers.

3. The Engineers

Raymond W. Sauer, supervisor of structural analysis at Armour Research Foundation, painted a fairly bleak picture of inertia among structural engineers who are faced with new forms.

He admitted there are many exciting structures in the U. S., but he called upon the architects to demand even more of engineers, to make them do what they are capable of doing.

In an aside from a program already turned into an aside, James D. Piper, vice president of the Portland Cement Association, treated the audience to a slide presentation on prestressed concrete apartment houses (5 and 8 stories) he had seen under construction on a visit to Moscow.

C. Merrill Barber, of the Cleveland engineering firm of Barber, Magee & Hoffman, showed an extensive collection of pictures of new U. S. buildings. He recommended them particularly to the attention of architects, whose form-follows-function thinking, he said, has confined them to a narrow range of structural shapes; to monotonous, repetitive details; to buildings that look as if extruded out of the ground.

Mr. Barber submitted that the parts of the building designed by the engineer make up 50% of its cost. The engineer, therefore, should share in the earliest stages of design with the architect. He decried the harsh divorce of architecture from engineering, and urged remarriage of structure and beauty.

Eduardo Torroja, the famous Spanish structural engineer, stopped off at the meeting en route from Moscow to Madrid, where he is director, Tecnico Instituto de la Construccion. He declared all barriers to using imaginative structural shapes are down; there is a sudden widening of range.

"All shapes which will stand up can be constructed," he said.

4. The Builders

Frank J. Rooney, Miami builder, took issue with the famed Spaniard. He said the new shapes can be built, but at a price.

The second contractor on the rostrum was more outspoken. A. L. Spencer, executive vice president of S. N. Nielsen Co., Chicago, asked the designers to consider how their creations are to be built. He reminded them that buildings are assembled by humans—"not artisans, just mechanics."

Mr. Spencer, in his own way, helped to bring the conference full circle to its beginnings in sociology.

"We're not pikers in this sociology game," said he. And he went on to describe how his firm was advised not to fight—but to join—young vandals plaguing a Chicago housing job.

"Pspchoanalysis? We understand it," he said, and he illustrated with the psychology needed to get a tile-setter to set tile as a tile-setter can set tile.

Human factors in construction? Mr. Spencer said his firm will add 3% to 4% to a bid just to cover "opinionated inspection."

5. The City Planner

John P. Robin, executive vice president of the Old Philadelphia Development Corporation, had previously headed Pittsburgh's redevelopment corporation.

As cleanup man for the conference he came up with two strikes against him. A previous speaker had cited Pittsburgh's Golden Triangle as a horrible example, and the audience apparently had, by silence, agreed.

Mr. Robin was unabashed. He suggested there was some Monday morning quarterbacking going on.

In rebuilding cities for the future, he said, the battle is between action and inertia, not between perfection and imperfection.

Warming to his subject, he said urban construction will keep pace with population pressures with or without proper plans. The problem is to find the proper governmental basis for action according to well-ordered plans.

Urban renewal calls for political leadership, business and civic interest, and interest among big building contractors.

Urban renewal is construction on a grand scale—it's not just an architectural exercise, he said.

How grand a scale? Mr. Robin hopes for a federal program of $500 million annually for at least 10 years.

(In an earlier luncheon talk, Federal Housing Administrator Albert M. Cole had called the federal government but a catalyst in the renewal reaction. Planner Robin referred to this as Mr. Cole's do-it-yourself urban renewal.)

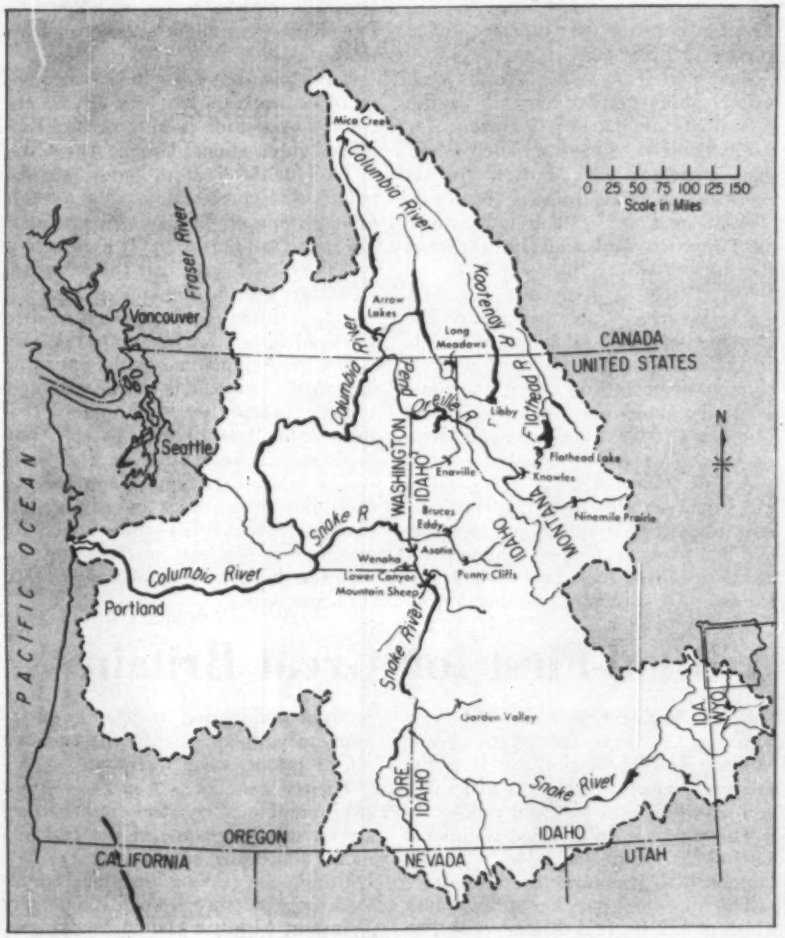
Mr. Robin was urging, in effect, that the way to start on renewal is to start.

"In many places," he said, "the bulldozer is the best planner there is."

Many of our plans and city redevelopments will be mediocre, because their planners and architects will be mediocre, he said, but they may meet present human needs of the city for 50 years in spite of their imperfections.

The conference ended as it had begun —on "human needs."

Columbia Basin Plan: What It Means



Major projects will cost $1.8 billion

Key Projects in the Columbia Plan

Project	Construction Cost, Millions	Benefit/ Cost Ratio	Useable Storage 1,000 Acre-Ft	Initial Installed Power- 1,000 kw
Libby	$307.9	1.70	5,010	344
Long Meadows	25.7	1.65	400	9
Ninemile Prairie	54.9	1.68	885	60
Flathead Lake	6.1	2.78	1,222	..
Knowles	234.9	1.67	3,080	256
Enaville	78.0	1.25	700	30
Garden Valley	146.1	1.51	1,940	286
High Mountain Sheep	226.3	2.20	2,100	600
Lower Canyon	194.5	1.73	2,500	640
Wenaha	94.6	1.34	900	134
Asotin	125.8	1.67	pondage	288
Penny Cliffs	210.0	1.60	2,300	292
Bruces Eddy	127.2	1.84	1,433	240
Over-all	$1,832	1.66	22,470	3,178

The Corps of Engineers' Columbia Basin reports released last week in Portland, Ore., blueprints developments that will:

- Extend hydroelectric power to 78% of the practical potential in the U. S. portion of the basin.
- Control floods well below the minimum desirable flow of 800,000 cu ft per second at The Dalles.
- Extend navigation on both the Columbia and Snake Rivers.

Several of the major projects proposed are steeped in controversy. Among these are three of the most important: High Mountain Sheep, Libby and Knowles.

But controversy cannot be escaped in programing water resource projects for best development of power and flood control benefits.

The report was made at the request of Congress by the Corps' North Pacific Division, with the help of many agencies. It brings up to date the 10-year-old "308" Report and its revisions. These previous studies have resulted in projects like Bonneville, McNary, Grand Coulee and Ice Harbor.

Annual benefits from the major water plan (see table) include $136 million for power, $11 million for flood control, and lesser amounts for recreation, fish and wild life.

• Power benefits—The Pacific Northwest is rapidly running out of good hydroelectric power sites. Average generation in the region in 1957 was 5.4 million kw.

The newly proposed projects plus those under way or authorized will bring the average to 13.2 million kw, 78% of the practical hydro potential of the Columbia Basin.

The region badly needs the added power. Average load is expected to rise to 16 million kw by 1975 and 23 million kw by 1985. Thermal power will be needed in the not too distant future.

Because the Canadians have been slow in developing a program, the Corps of Engineers was unable to take Canadian power into account in their studies. But the new report may well have the effect of crystallizing Canadian developments.

Both British Columbia and the Dominion have been making studies. And recently private interests—Wenner-Gren of Sweden—have been investigating hydro power possibilities, on British Columbia's Peace River, that might total 6 million kw. But the Peace River scheme probably could not be economical without power export to the U.S.

The British Columbia report is expected momentarily. And an engineering study on development of the Koo-

tenia (vitally involving Libby Dam) is expected early next year from the International Joint Commission.

Canada is expected to resume negotiations with the U. S. immediately on cooperative development of the Columbia River. The Canadian aim includes coordinated operations but with Canadian ownership and control retained for projects built in Canada. Canada will ask for return of up to half the extra power from Libby and from release of storage water created by Mica Creek Dam in the lower Columbia plants.

Authoritative sources in Canada say that if the U. S. agrees to these downstream benefits, Canada will endorse the Libby plan.

• **Flood control**—The most important area as far as flood control is concerned is the stretch of the Columbia River below Bonneville Dam. Existing and proposed levees in this area will handle a flow of 800,000 cfs at The Dalles. This is considered the minimum desirable flood control.

With 10.5 million acre-ft of upstream storage now available, flood flows equivalent to the maximum flood on record (1894) would be regulated by present storage to 1.03 million cfs. About 8 million acre-ft more storage is needed to reach the minimum desirable, and 4 to 5 million acre-ft of this must be above Grand Coulee in the Columbia-Kootenai-Clark Fork area.

The greatest area of controversy stirred up by the reports is in the Middle Snake, highlighted in recent years by the Hells Canyon debate.

The report brought immediate indication of a battle with the Department of the Interior over the recommendation of a high Mountain Sheep Dam in the Middle Snake River (ENR Dec. 11, p. 26).

Interior will stick to its guns in backing the proposition of Secretary Fred Seaton that there should be no dam construction on the Middle Snake below the Imnaha River until high-dam fish-passage is solved (ENR Nov. 6, p. 23).

• **Navigation**—There may be significance in the fact that the Corps chose to release its plan at a new meeting of the Inland Empire Waterways Association. This group has been pushing navigation on the Columbia system for years and has been responsible for lobbying-through appropriations to start some of the projects.

The report recommends extension of navigation to Rock Island Dam on the Columbia at a cost of $65 million—mainly for locks at Priest Rapids and Wanapum Dams. And it calls for extending barge navigation on the Snake in connection with the Asotin project.

Teamsters Eyeing Office Workers?

The teamsters union may try to organize construction industry office workers in 11 western states.

That's what may be behind some recent administrative changes in the Western Conference of Teamsters.

The conference has appointed a full-time organizer, Jack Poteet, for its Construction and Building Materials Division and has established a new committee to deal with jurisdictional disputes with other unions.

Mr. Poteet's appointment, according to the conference, will enable the construction division to step up its organizing activities. If office workers become an organizing target, the drive would be undertaken by the Freight Checkers Clerical Employees and Helpers Union, a teamster affiliate.

A spokesman for the FCCE local in San Francisco says there have been recent discussions on organizing construction office workers, but no definite plans have been made for a push in his area. He says Mr. Poteet is making a construction industry survey and that Mr. Poteet's services might also be available to the local.

If the teamsters move in the direction of office workers, they are apt to encounter opposition from the Office Employes' International Union, AFL-CIO.

The OEIU local in San Francisco admits that construction office workers fall into one of the organizing areas it has under consideration. It also feels it is "extremely likely" that the teamsters have their eyes on the same group.

The construction division's new jurisdictional committee is expected to have counterparts appointed by the operating engineers, carpenters, and laborers unions. These are the unions that formed the controversial pact to promote organization.

The new jurisdictional committees of the unions involved in any dispute, according to the WCT construction division, will conduct hearings and decide the dispute. No provision is made for arbitration.

A Road-First for Great Britain

Great Britain's first limited-access highway has been opened by Prime Minister Harold Macmillan. It is the Preston Lancashire Bypass, a $10.5 million road that runs for eight miles.

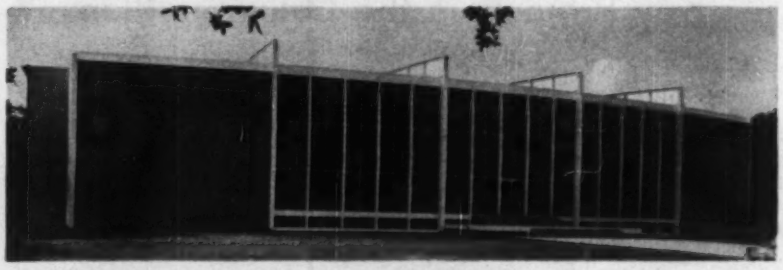
The bypass is the the first completed part of an expressway that will link London with northwest England.

The new highway has a minimum width of 112 ft. It is divided, with two lanes in each direction. The median strip—or central reservation, as it's called in Britain—allows for future construction of a third lane on each side.

Access is limited to one two-level junction with approach roads connecting to another main highway.

Highest gradient is 1 in 25. Surface is bituminous. Low steel crash barriers are set up along some of the embankments and bridge approaches.

Britain is working on the "largest road program since Roman times" says Transport Minister Harold Watkinson. It will provide about 380 miles of new highway. Largest single project is the 71-mile London-Birmingham highway now being built.



Museum Has Exposed Steel Frame

The welded, structural steel, rigid frames of a $250,000 exhibition hall for the Museum of Fine Arts in Houston, project beyond the walls and roof. The 10,000-sq-ft roof is carried by four 5-ft-deep, 82-ft span plate girders extending above it, while gray-tinted plate glass is supported in light steel frames between the columns. Ludwig Mies van der Rohe, Chicago, was the architect, with Staub, Rather & Howze, Houston, as associate architects. Frank J. Kornacker was the structural engineer. Farnsworth & Chambers Co., Inc., was the general contractor and J. E. Cook Steel Co., Inc., was the steel erector.

A $26 million project (dashed line) hides beneath Boston streets but . . .

World's Widest Tunnel Is Open

The widest and probably one of the most expensive cut-and-cover vehicular tunnels in the world has been partially opened to traffic in Boston.

The tunnel is part of the city's centrally located John F. Fitzgerald Expressway. It is 2,400 ft long and is being built at a cost of $26 million, including right-of-way.

Adjacent sections of the expressway are elevated. In the tunnel area, however, preliminary surveys showed that the dislocation of industries, the depreciation of property values, and the changes in street patterns resulting from an elevated roadway would make this type of construction prohibitive. Hence the tunnel (ENR May 16, 1957, p. 62).

In spots the tunnel is close to 200 ft wide. It carries two three-lane roadways, each 49 ft wide, and has entrance and exit ramps along its length to and from the city streets above. Where these ramps are close together, the roadway has an extra 10-ft lane in each direction for safer traffic weaving.

The section now open is the northernmost 1,500 ft between Congress and Essex Streets. It contains a 200-ft crossing of Dewey Square in front of South Station. The crossing posed almost insurmountable construction problems and cost close to $3 million.

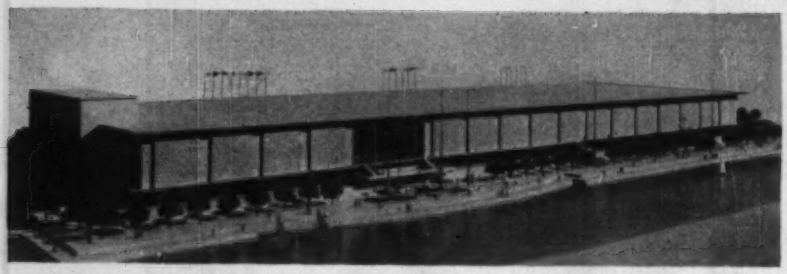
Because of a difficult soil and water problem, the tunnel structure was designed to equal the weight of the material removed from its cut. In the uncovered approach areas, this called for floor slabs up to 14 ft thick.

Working around and relocating hundreds of existing utility installations, maintaining traffic on cluttered parallel and intersecting streets, and protecting adjacent structures during construction operations were among the contractors many problems.

Lighting was a design problem, since there is no comparable structure in existence. More than three miles of fluorescent lights are used in the half-mile-long structure. The circuits are designed so the over-all intensity of the tubes can be raised or lowered. In the section now open the desired intensity has been determined and the circuits are now locked in a permanent position.

Telephones line the walls at close intervals for emergency service, fire extinguishers are also plentiful.

To complete the safety features of the tunnel, a sixteen station, closed circuit television system will soon be installed, complete with a paging system. When accidents or traffic snarls occur a monitor will be able to appraise the situation instantly. He can then change traffic signals, dispatch service vehicles, and give instructions to stranded drivers.



Chicago Exposition Hall Bid

Bids were received last week on 11 contracts for construction of Chicago's immense new exposition center at 23rd St. and Lake Michigan.

Apparent low bidders and the amounts of their bids are shown in the accompanying table.

The $34 million project is financed with a $25 million bond issue, plus about $9 million on hand, by the Metropolitan Fair and Exposition Authority. No completion date has been set but the builders hope to finish it in time for the 1960 national political conventions.

• **Exposition building**—The main feature of the project is a two-story structure, with partial basement, measuring 1,080 ft long and 340 ft wide.

The upper floor is a huge exposition area containing 300,000 sq ft of open space. At first floor level there is an auditorium that can seat 5,000 persons, a restaurant for 650 persons, and a cafeteria for 575. There are also a number of meeting rooms, a 550-seat lecture hall and special-events rooms.

• **Long-span trusses**—Maximum unobstructed space is provided in the exposition area by using long-span steel trusses to support the roof. These trusses extend across the width of the building. They have a 210-ft center span and 60-ft cantilever spans. They are spaced 60 c-c and are supported on steel columns.

A secondary truss system spanning the 60 ft between the main trusses carries steel joists and purlins. A poured gypsum roof will rest on them. Height above the exposition floor is 40 ft at the center of the roof trusses and 30 ft at the columns.

• **Heavy floor loads**—The exposition floor, of cast-in-place reinforced concrete, is designed for a live load of 400 psf.

The exposition floor, a flat slab design, is carried on round cast-in-place concrete columns, supported on heavy steel piles driven into hardpan. The auditorium floor will be placed directly on compacted soil and gravel.

Exterior walls are sandwich-panel construction. The panels will be composed of precast concrete facings and an insulation core. Standard panels are 15 ft long, 4½ ft high.

The entire building will be air conditioned. Lighting will be high voltage, 477 volt fluorescent. Heavy-duty freight elevators will serve both floors. Floors will also be connected by stairways and moving stairs.

• **Three-in-one**—The design makes it possible for one show to move in while another is on the floor and a third is moving out.

The exposition floor is arranged so it can be separated into three large areas by huge folding partitions. Each area will have its own facilities: electrical power outlets, plumbing, gas, steam, compressed air, intercommunication systems, telephones, washrooms, and television.

A double-box utility gallery beneath the exposition floor contains these utilities, with outlets located at 30-ft intervals. This will provide considerable latitude in setting up exhibits any place on the floor.

Robert J. Cantrell is project engineer for Alfred Saw, chief architect on the project. Consulting architects and engineers include: Carl Metz and John Dolio of Shaw, Metz and Dolio; John Root of Holabird & Root & Burgee; Victor Hofer of Ralph H. Burke, Inc.; and Edward Stone.

David Mayer, Jr., is chairman of the Metropolitan Fair and Exposition Authority. Edward J. Lee is general manager.

Main Bids on Exposition Hall

Low Bidder	Base Bid
General Work:	
Gust K. Newberg Construction Co.	$12,347,000
Structural Steel:	
American Bridge Div., U. S. Steel	$2,337,000
Heating, Pipe-fitting:	
Dell Corp.	$1,058,000
Ventilation:	
Anderson & Litvak Co., and Zack Co.	$1,337,000
Electrical Work:	
Fishback, Moore & Morrissey	$2,900,000

Dispute in Oklahoma

Governor-elect won't honor predecessor's road contracts

There is a noisy battle going on in Oklahoma over whether highway contracts let by the outgoing governor will be binding on the governor-elect.

The fight began when Oklahoma's outgoing governor, Raymond Gary, announced that he will hold a letting on December 23 for highway contracts worth $16.9 million. His successor, 33-year-old Governor-elect J. Howard Edmondson, countered with the statement that his administration "does not expect to honor the contracts" on the ground that the state does not have enough money to pay for them.

The incumbent governor now seems to be holding the strongest position. Unanimous approval of his highway plans was voted last week by 60 Oklahoma legislators, members of four legislative council committees concerned with highways. This vote was an endorsement of a similar unanimous approval voted in September by the executive committee of the legislative council.

C. A. Stoldt, director of Oklahoma's State Highway Department, says he recommends at a letting whether or not to award a contract, but that no binding contract is signed then. Mr. Stoldt says a binding contract is negotiated and signed, and a work order, is issued, after the director determines that funds are available for the project.

Awards Will Boost Capacity Of Coney Island Plant

Four contracts totaling more than $9.7 million are now under contract for the expansion and conversion of New York City's Coney Island sewage treatment plant.

Largest contract, for structure and equipment, went to low bidder, Lasker Goldman Corp., for $8,683,000. Electrical work will be done by L. I. Wallman Co., Inc., for $749,000. S. M. Plumbing Co., Inc., snared the heating and ventilation job for $186,800. Forsythe Plumbing and Heating Corp. won the plumbing phase for $108,800. All are New York area firms.

Construction includes two covered aeration tanks and provision for possible future installation of a system for ozonizing exhaust air.

The daily capacity of the 23-year-old plant will be increased from 70 to 110 million gallons.

Conversion provided means that a high-rate, activated-sludge process will be employed year-round. Actual construction work will begin within a month.

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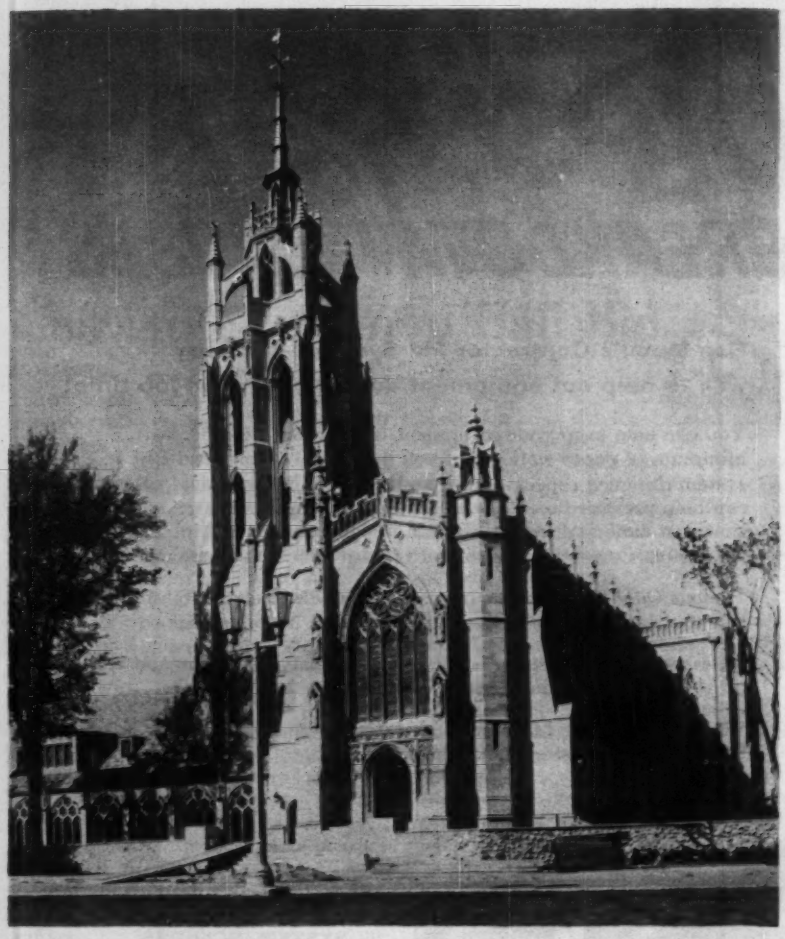

This near-replica of Scotland's Melrose Abbey may be . . .

The Last of Its Kind?

After 11 years, $6 million and 47,000 stones set in place, builders have converted the Col. Edwin S. George mansion in Bloomfield, Mich., into a near-replica of Scotland's centuries-old Melrose Abbey.

The resulting Gothic church building is called "Kirk-of-the-Hills" by its 1,900-member Presbyterian congregation.

The church is probably the last of its kind, building committee members think. Spiraling building costs and the shrinking number of skilled craftsmen required for the detailed stone work would make another such job even more difficult.

Funds for converting the original Tudor mansion came primarily from the George estate. The congregation also contributed to the project.

A $1 million fire in 1957 delayed the job and added to its cost.

The church, 171x84 ft, seats 650 persons. The tower is 168 ft high.

Exterior walls are artificially weathered limestone; interior walls are polished white limestone. All stones, inside and out, were cut to individual blueprints and vary from five pounds to over two tons each.

Wirt C. Roland was the original architect. After his death in 1946, the Detroit firm of George D. Mason & Co. continued the work. O. W. Burke Co. of Detroit was the general contractor.

Atlanta Airport Gets Thin-Shell Barrel Arches

First step has been taken in a $17 million enlargement of Atlanta Airport. Blount Brothers Construction Co., Montgomery, Ala., last week filed low bid of $9,996,689 for construction of an all-new passenger terminal.

The terminal will feature ticketing facilities housed under eleven 44-ft, thin-shell concrete barrel arches. The arches will be 4 in. thick.

New York Surprise?

Figures show city school costs dropped this year

School costs in New York City are actually lower this year than last. That's a fact all but buried by recent charges of high cost and waste in the city's school building program (ENR Nov. 27, p. 27).

While city, state and national general construction cost indexes have risen during the year, New York City school costs actually dropped from $1.78 per cu ft last year to $1.61 for the first ten months of 1958.

William H. Correale, superintendent of construction for the Board of Education, says the drop is due to economy in the school building program and lower bidding figures from contractors in the increasingly competitive school construction field.

Controller Lawrence E. Gerosa's office, where the charges of school board waste originated a month ago, had no immediate comment on the drop in city school costs.

The Board of Education released the third and final portion of its reply to Mr. Gerosa's charges last week. The board defended its policies and building program by citing among other things:

• **Low change orders**—Held excessive by the controller, the change orders have been kept to 1.8% of construction cost, "well below the 5% normally permitted by the Administrative Code to an agency of the city," according to the report. Mr. Correale says the 1.8% also includes all the changes involved in modernizing existing schools. And these changes, he points out, are bound to run higher than in new construction.

• **Dollar savings**—By reducing story heights alone, the board lists a saving of $12.5 million in the construction of post-war schools.

• **Site economies**—In an example of building to fit the site, the report mentions how an existing plan was adopted to the contours of a sloping rocky site to avoid extensive blasting. Construction cost was given as $1.58 per cu ft for this project as opposed to the $1.64 city-wide average of the period.

• **Standardization**—Since 1951 standard details have been reduced from about 400 to approximately 60.

• **Other authorities**—In reply to charges of extravagant design, the report gives the Municipal Art Commission as the authority that passes on all aesthetic aspects of its designs; every project submitted has the commission's approval.

Controller Gerosa labeled the board's reply, "an etherial effusion of explanations and excuses." He, in turn, will reply "in detail" to the board's rebuttal.

Contractor for Glen Canyon Bridge: Kiewit-Judson Pacific-Murphy Corp. in a joint venture.

Bold New Bridge Spans the Mighty Colorado. At Glen Canyon, near the Arizona-Utah frontier, a great steel bridge will soon carry north-south traffic over the Colorado. The bridge is a brilliant feat of engineering. Anchored in sheer canyon walls far above the river, it is the country's highest and second-longest steel arch span.

Lower chords are tied into skewbacks on opposite sides of the canyon. As steelwork progressed from two directions toward the closure point, Bethlehem 1½-in. bridge strand was used to hold the arches in position. These strong wire cables were run to the upper chord members from big tieback towers, which themselves were securely guyed by Bethlehem strand. This system of tiebacks and guys proved an effective means of supporting the steel segments as they thrust out into space.

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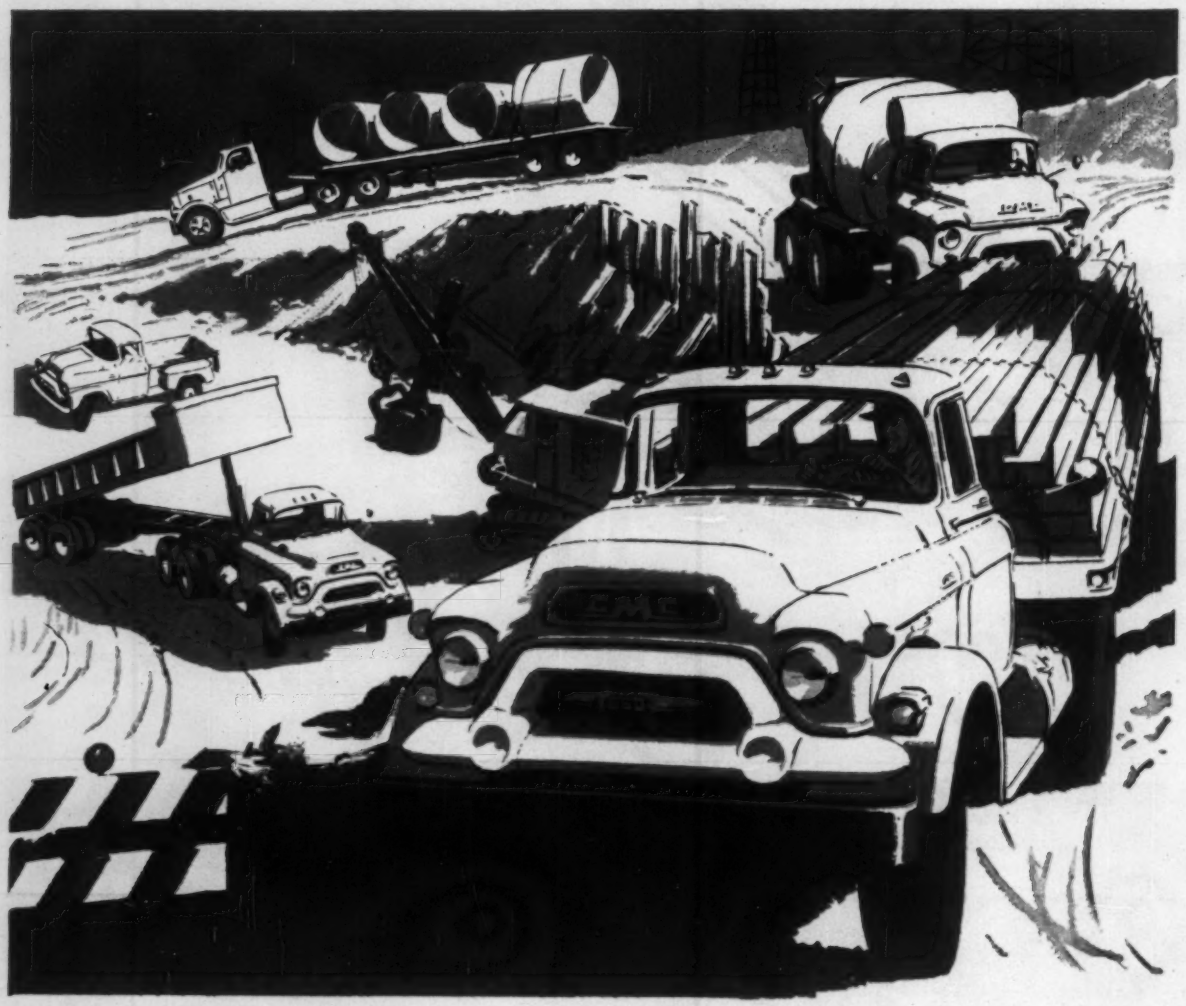

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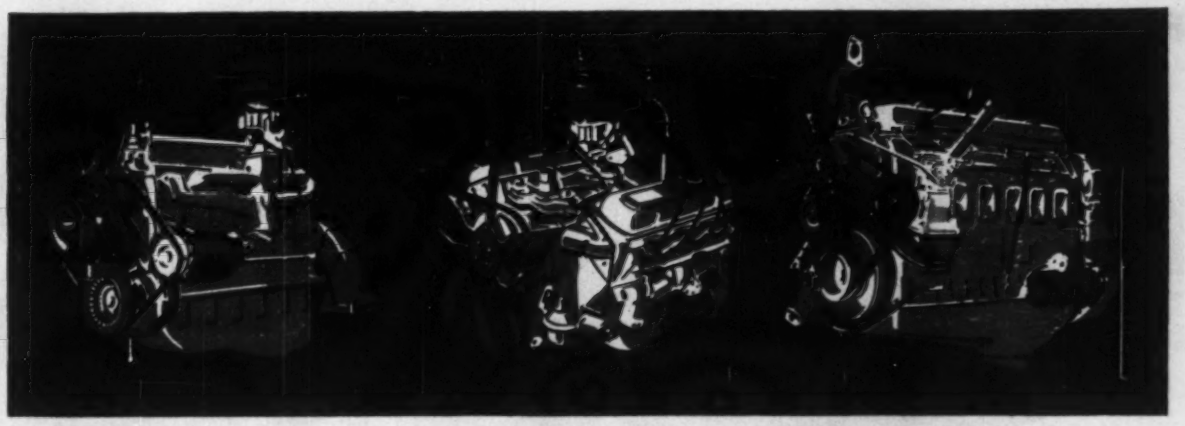

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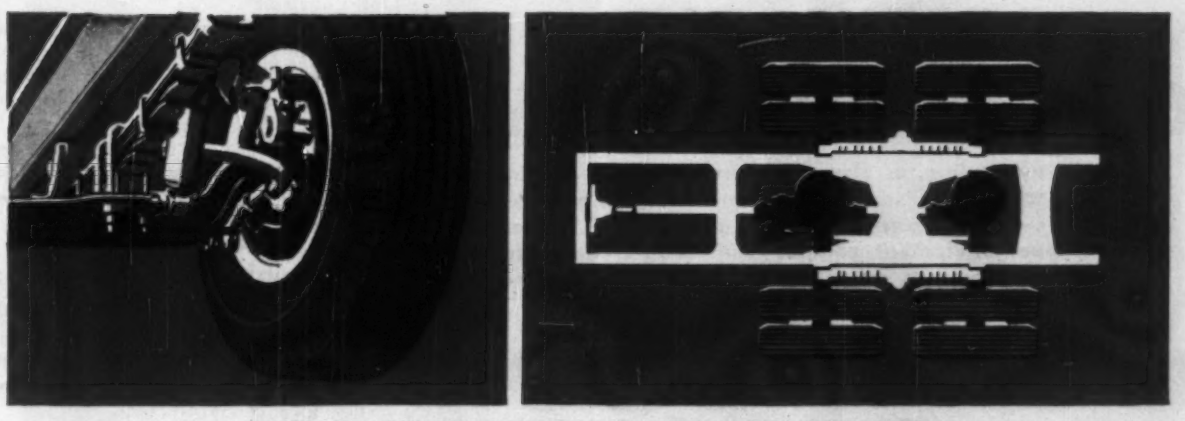

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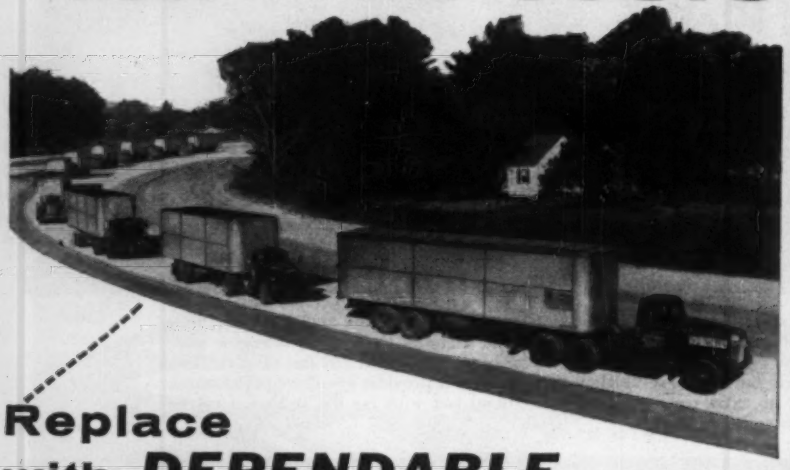

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Y4091	4	91	36.0 @ 3400 RPM
F4124	4	124	47.0 @ 3200 RPM
F4140	4	140	52.0 @ 3200 RPM
F4162	4	162	58.0 @ 3200 RPM
F6186	6	186	77.0 @ 3500 RPM
F6209	6	209	90.0 @ 3500 RPM
F6226	6	226	98.8 @ 3500 RPM
F6244	6	244	103.3 @ 3500 RPM
M6271	6	271	96.5 @ 3000 RPM
M6290	6	290	108.0 @ 3000 RPM
M6330	6	330	125.0 @ 3000 RPM
M6363	6	363	146.0 @ 3000 RPM
B6371	6	371	123.5 @ 3000 RPM
B6427	6	427	142.0 @ 3000 RPM
FO6226	6	226	126.2 @ 3400 RPM
K6271	6	271	114.5 @ 3200 RPM
K6290	6	290	123.0 @ 3200 RPM
K6330	6	330	147.0 @ 3200 RPM
K6363	6	363	162.0 @ 3200 RPM
T6371	6	371	143.8 @ 3000 RPM
T6427	6	427	170.0 @ 3000 RPM
U6501	6	501	186.0 @ 2600 RPM
R6513	6	513	192.2 @ 2800 RPM
R6572	6	572	220.0 @ 2800 RPM
R6602	6	602	232.0 @ 2800 RPM
S6749	6	749	250.0 @ 2800 RPM
S6820	6	820	300.0 @ 2800 RPM
V8603	8	603	260.0 @ 3200 RPM

CUSHIONED POWER DIESEL

Model	Cyl.	Displ.	Bare Engine H.P.
TD6427	6	427	146.5 @ 2600 RPM
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Short Notice

The little fellow standing beside the street sign may be too young to read it—but he can see it. And so can motorists driving by. The 4-ft-high marker in Lakeside, Va., a suburb of Richmond, is just about at the eye level of drivers. It saves neck-craning, puts the letters within headlight range, and won't be hidden by tree branches.

'Memphis' Ruling Reversed; But Little New Work Seen

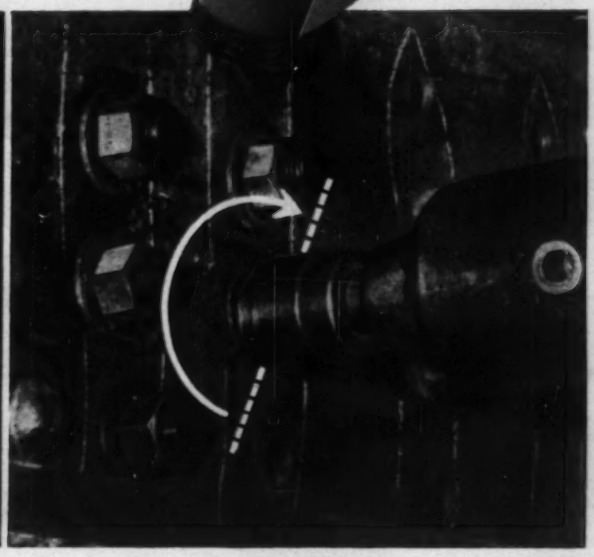
Last week's reversal by the U. S. Supreme Court of the "Memphis decision" is unlikely to result in a surge of new pipeline construction.

Under the terms of the Memphis decision (ENR June 5, p. 114) a gas pipeline company had to get advance consent from its customers before filing a rate increase with the Federal Power Commission. Pipeline companies may now make rate increases and then submit them to FPC for approval. The prior consent of customer no longer will be needed. This was the procedure before the Memphis decision.

Only a few of the major pipeline companies had delayed expansion projects because of the original ruling. Most of the firms continued to enlarge their facilities. Expansion has been necessary, because of increased demand for natural gas and the creation of additional sources of supply.

A record $1.87 billion was spent this year by the gas industry for construction (ENR Aug. 12, p. 133). American Gas Association officials predict an expenditure of $1.74 billion for 1959. This amount is based on a survey made in August. A spokesman for the organization says this sum is likely to increase somewhat as a result of the Supreme Court's ruling because a few companies have held back.

Latest approved ways to tighten this approved bolt



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2. HALF TURN

Latest technique calls for running up nuts solid with impact wrench at cracked throttle. You then apply full power, giving each nut in the joint an additional half turn. (Three quarter turn for bolts 6 inches or longer.) Wrenches need no calibration.

THESE two methods are widely used to assure good torquing. Erectors approve this ease of assembly. For by either method, the bolts cost less installed than rivets, reduce cost per ton of installed steel.

RB&W High Strength Bolts are especially approved by the crews that work with them. They appreciate the fine finish, clean threads, uniformity. These bolts have also obtained the stamp of approval under New York City Board of Standards and Appeals based upon independent laboratory tests confirming quality and conformance to ASTM Spec. A325.

To assure yourself the finest of fasteners for your buildings, bridges and industrial plants, insist on high strength bolts with the RB&W identification. Send for Bulletin HS-1. Russell, Burdsall & Ward Bolt and Nut Company, Port Chester, New York.

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LAUNCHING AREA has instrument cable tray (right foreground); service tower (rear).

Construction Behind

Lt. Col. John P. Beeson
Missile Project Officer
U. S. Army Corps of Engineers
Jacksonville, Fla.

Not all the headaches at Cape Canaveral come from misfired missiles. Construction of facilities for the missile test center there forces builders to work with watchmaker precision while trying to meet next-to-impossible deadlines.

Transportation bottlenecks, seas of mud, huge quantities of unwanted earth, small tolerances and untried designs are among the problems.

The test center has mushroomed into an extensive complex of construction. In the last two years alone over $80 million has been spent on new structures for missile tests.

Missile assembly buildings, fuel storage areas, laboratories, control centers, launching stands and even a deep-water seaport are behind each rocket that hits the headlines.

• **Missile assembly**—Assembly buildings resemble large hangars. Laboratories and shops line their sides. These buildings cost $1.5 million each. Nineteen of them have been built at the Cape. The last 16 were built from a single structural steel design.

This standard frame, calling for 420 tons of steel, has reduced design time and cut construction time by an estimated one-third.

Overhead cranes in each building handle the missiles and their parts. Crane bridges are under-slung and travel on rails suspended from the roof trusses. Pairs of bridge cranes span each assembly building's main bay rather than a single bridge covering the entire span.

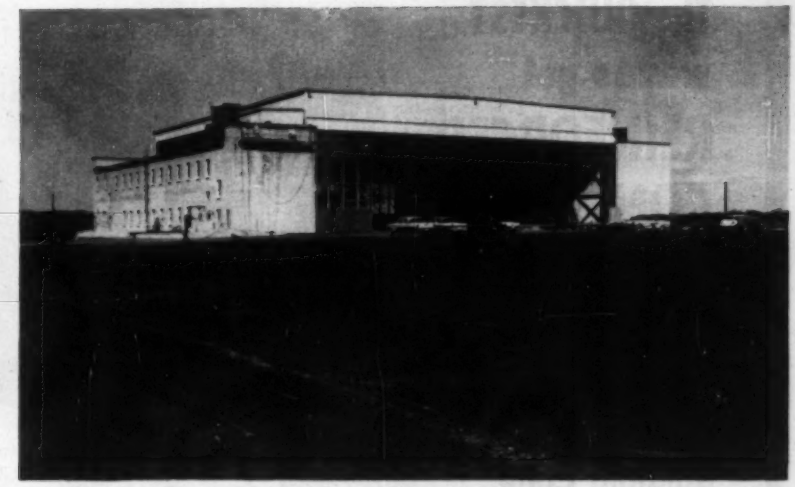
Floors of the assembly buildings are laced with covered trenches that carry instrument and power circuits from laboratories to missiles being tested.

• **Launching**—From the assembly building the missile moves to its launching facility. Each of the 20 facilities at Cape Canaveral has three parts: a blockhouse (the control center); launching pad for stand; and service building for fuel storage and supply.

The blockhouse shelters missile controls and personnel during launching. The blockhouses for Intermediate Range Ballistic Missiles, like the assembly buildings, have standardized structural design—based on an assumed explosive force. (Design and construction of Canaveral blockhouses were described in ENR, May 1, p. 41.)

Vanguard's blockhouse, for example, is of reinforced concrete with walls 2 ft thick. Its roof widens from a 5½-ft thickness at the edge to 8 ft at the crown. viewing ports are protected by three, 4-in. thicknesses of armored glass.

The heavier Inter-Continental Ballistic Missiles require more blast-resistant control centers. Though not of standard design, ICBM blockhouses are generally reinforced concrete domes covered with cushioning layers of sand. The blockhouse pictured under construction (right) has a dome 5 ft thick. A 7-ft



MISSILE ASSEMBLY BUILDING, of standard steel frame, has a clear floor area 160 ft by 130 ft. Along each side are laboratories and shops.

the Missiles

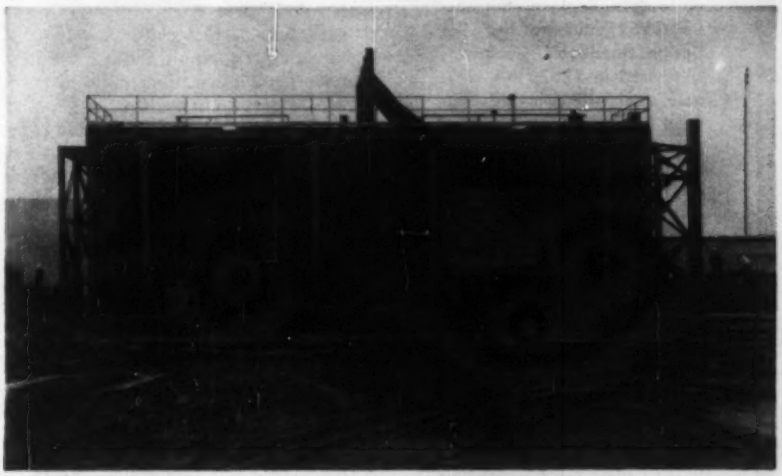
layer of sand will cover it; and the sand, in turn, will be covered by pneumatically placed concrete to prevent erosion.

The steel column, central support for the forms, was capped by the first concrete placed. Then the steel forms and braces shown were erected. When the concrete in this section is strong enough to support itself, the forms will be jacked down onto a set of small wheels, rotated about the central tower, and jacked into place for the next section.

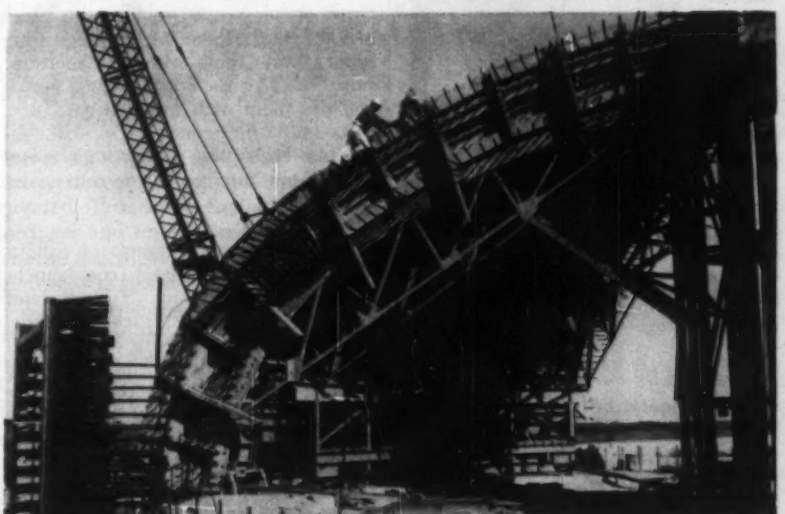
Launching stands vary from simple concrete in this section is strong enough For smaller missiles, the weight of the stand is enough to balance the uplift force. But pile foundations are needed for larger rockets—one pad required 13,000 linear ft of steel piling. The foundation must resist the weight of the structure and missile and the 250-ton thrust of rocket engines.

A missile handling machine, part of the launching facility, is in a concrete-lined pit that extends 17.5 ft below water table and is only 500 yd from the ocean. Specifications require all work to be done in the dry and complete excavation prior to pile driving. But the contractor foresaw that pile driving vibrations might cause a "quick" condition in the sand subgrade. So he got permission to drive through part of the overburden. The weight of overburden counteracted buoyant force from water in the sand. His men excavated and lowered the water table 2 ft. Then they drove sheetpiling, well-pointed and finished excavating in the dry.

(*Continued on page* 36)



LAUNCHNG PAD for Titan has two water-cooled flame deflectors, one to test each missile stage. Steel pile foundation resists thrusts up to 250 tons.



ICBM BLOCKHOUSE is Titan's nerve center during launching. Reinforced concrete dome, 5 ft thick, will be shielded by a 7 ft sand layer.

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VANGUARD BLOCKHOUSE is built from a standard structural design. Walls are 2 ft thick. Roof widens from 5½ ft to 8 ft thickness of reinforced concrete.

The service building holds apparatus for handling and storing rocket fuels. And here is one of the major construction bottlenecks.

None of the piping, tanks or valves is made from stock items; and all parts of the fuel system must be assembled within very close tolerances. This is required for two reasons: Liquified oxygen and nitrogen fuels evaporate quickly because of their low boiling points; highly compressed gases used in rocketry have pressures up to 6,000 psi. This makes assembling the fuel network exacting, almost experimental, hand work.

The problem of clean pipelines plagues contractors at Cape Canaveral. Fuel lines must be almost surgically clean to prevent explosions and assure proper flow of fuels. Specs prohibit any foreign particles over 150 microns (.0006 in.–smaller than the smallest pencil dot) in the completed network.

For example the contractor must clean stainless steel pipes with steel brushes, flush them with a degreasing agent, pickle them with acid solution, rinse them with demineralized water and dry them with nitrogen gas.

To test the contractor's skill, inspectors check the system with everything from microscopes to ultraviolet lamps.

• **Water supply**—Thousands of gallons of water are needed, fast, to cool launching pads and fight fires. To withstand erosive exhaust gases, each flame deflector is surrounded by a water jacket. Water is also forced at high pressure through tiny holes in the steel deflector face to form a cooling film. These huge water jackets require up to 35,000 gpm.

Highly flammable rocket fuels present a continuous fire hazard. Fire demand ranges up to 20,000 gpm. To sweep away burning fuel mixtures and quench the flames, water is sprayed through fog and deluge nozzles.

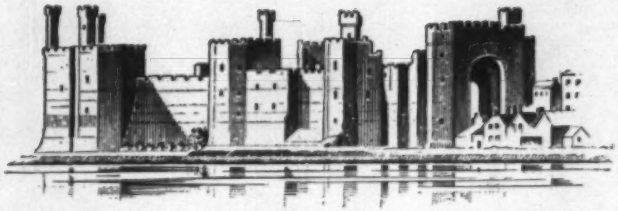
Despite the high rate of use, however, water storage requirements are not great because of the short duration of fires. Flame coolants are used less than two minutes and most fires are controlled within 10 to 15 minutes. Both systems—water cooling and fire fighting—are controlled simultaneously from the blockhouse.

• **Earthmoving**—Ten million cu yd of earth have been excavated at the Cape in the last two years. Almost half this total is spoil dredged from the nearby Banana River harbor and channel.

A stockpile of 2½ million cu yd was dredged from the river in 1956. This was later used as fill for building foundations. The remainder of the excavation was for utilities (340 miles of power and communication lines are buried underground), footings and drainage.

• **Transportation**—Nearest railheads to Cape Canaveral are Cocoa and Titusville, almost 25 miles away. They are too small to handle the volume of materials used in construction—10,000 tons of structural steel and 150,000 cu yd of concrete in the past two years. Trucks hauling from railhead to missile center cross busy U. S. Highway No. 1 and compete with heavy traffic along the route. Poor transportation facilities slowed time schedules, creating another headache for the men who are building Cape Canaveral. They are working under Federal Government contracts supervised by the Army Corps of Engineers.

For an inside look at the design and construction of missile launching towers, please turn to page 40.



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Vision-Vent installations such as this now can be specified with exclusive new Truscon Supercoat Finish to eliminate field painting. Pictured is Activities Building, Georgia Training School for Girls, Adamsville, Ga. John J. Harte, architect. Abco Builders, contractor.

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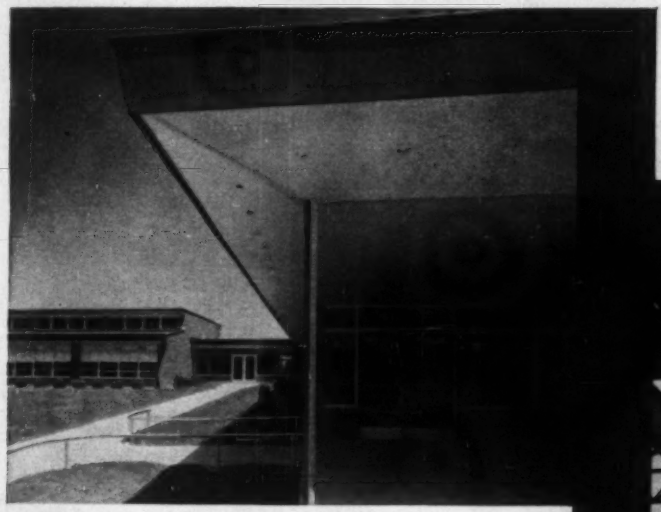

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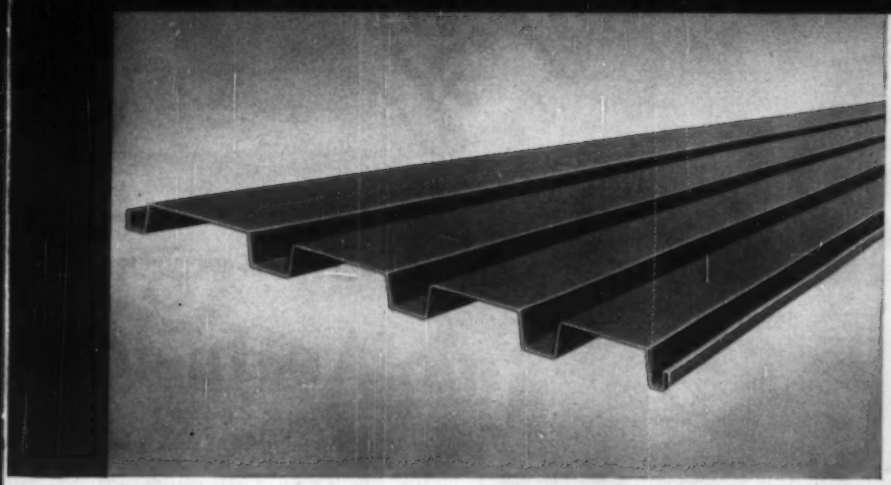

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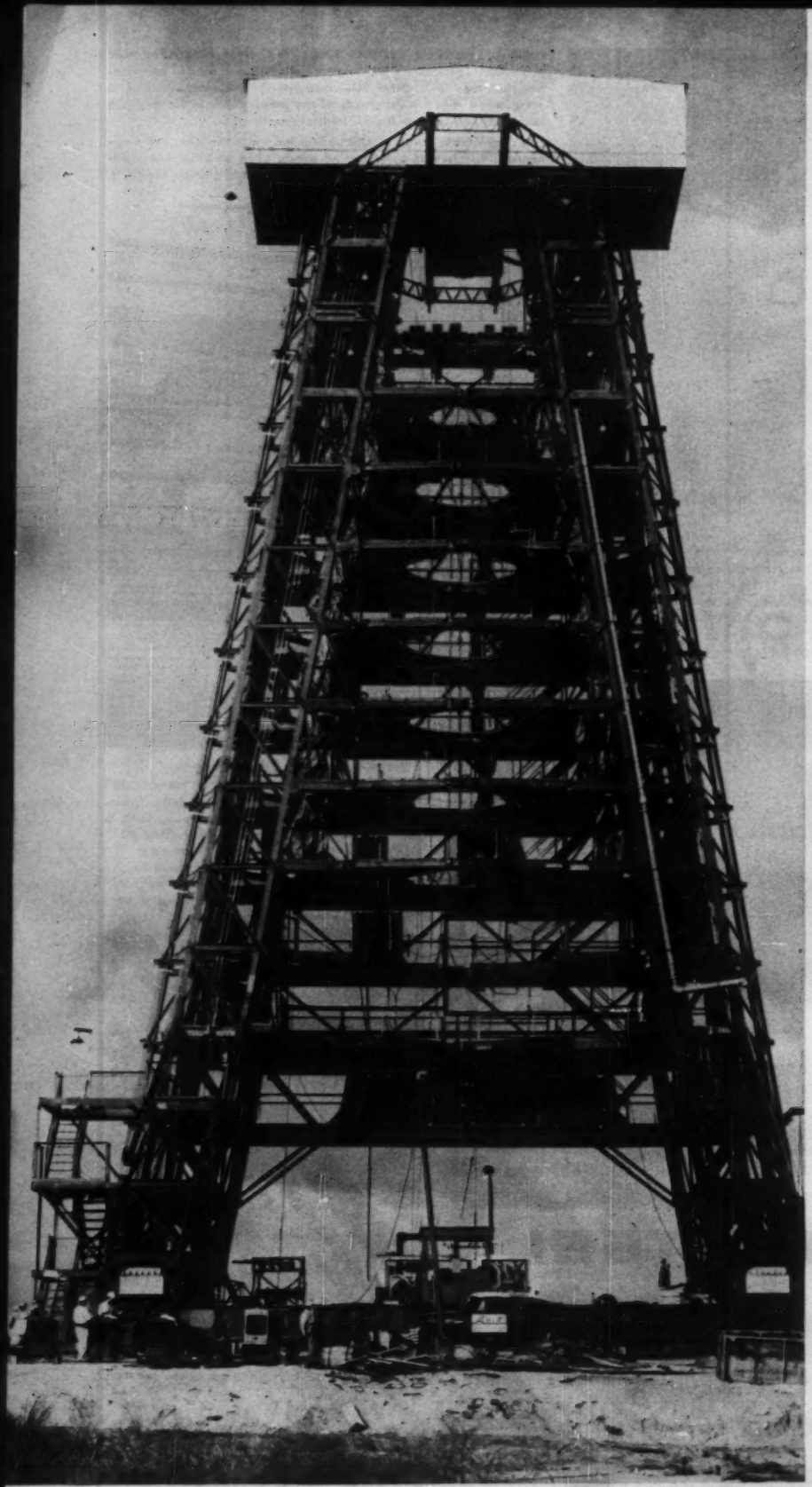


Mobile service tower rises to 10-story height at Cape Canaveral, Fla.

Another Canaveral tower

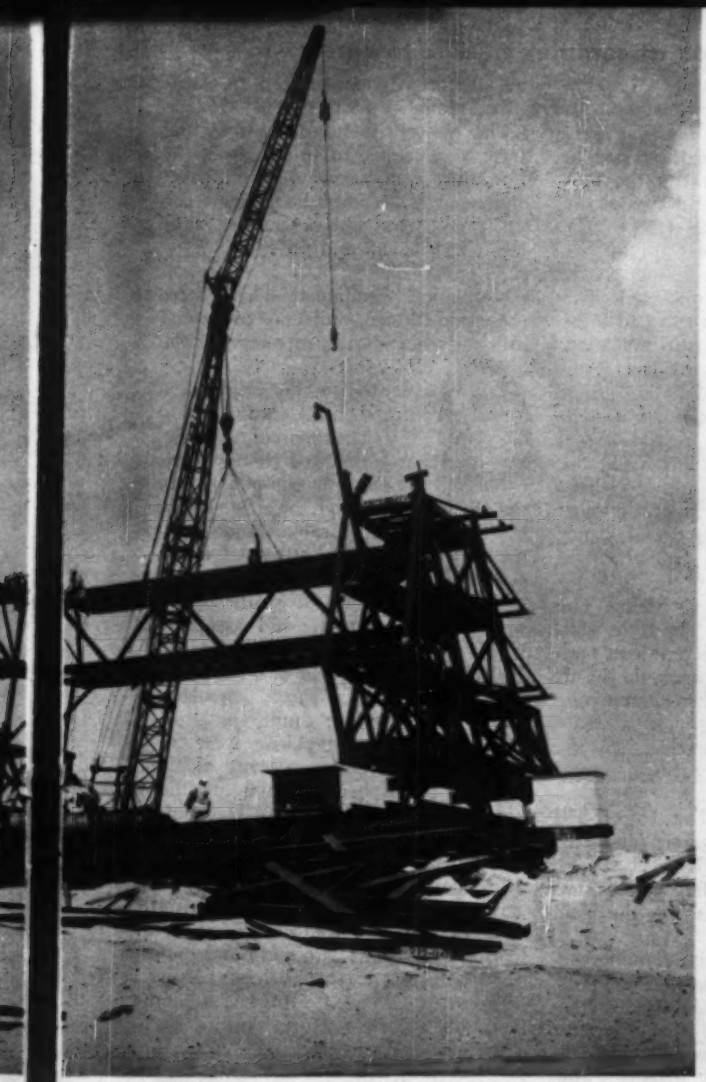
An Inside

R. A. Greene
Chief Mechanical Engineer
Kaiser Steel Corp. Fabricating Plant
Montebello, Calif.

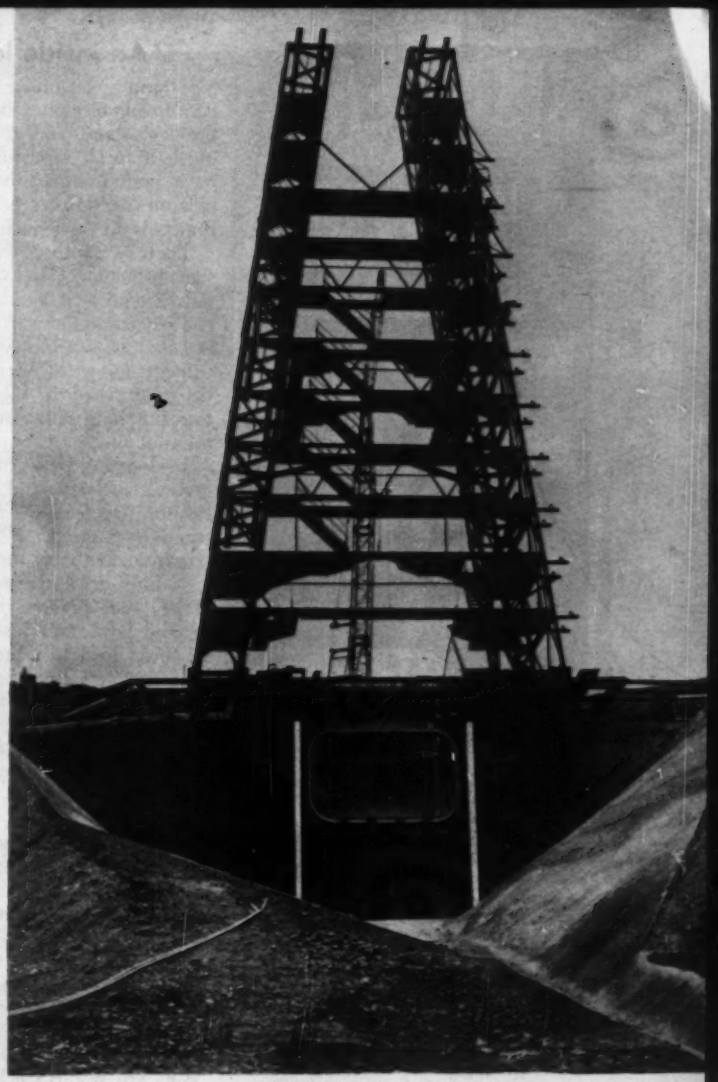
Most prominent part of the rocket program's complex system of ground support facilities is the missile servicing tower.

Though not the most costly construction element, these huge steel towers are built to extremely close tolerances. The complex mechanical assemblies mount hoists, elevators, moveable platforms and mazes of piping and conduit. Most of them are mobile.

So far, each different missile has required service towers specifically tailored to its particular needs. Moreover,



was erected in 14 days with long-boomed crane.



This California tower isn't mobile, has similar frame.

Look at Complex Missile Towers

each missile has required different tower types for static testing, for experimental flight testing and for operational use.

During recent months Kaiser Steel's Montebello fabricating division plant has become increasingly active in the design, fabrication and erection of missile towers and other ground support equipment. Included are towers for the Atlas inter-continental ballistic missile for Convair at Edwards Air Force Base, at Sycamore Canyon in California, and at Cape Canaveral in Florida. Convair has also supplied towers for Martin at Denver and at Cape Canaveral.

• **Three design problems**—Kaiser built the first complete mobile tower unit for the Atlas missel at Cape Canaveral, Fla. This can be used as an example of the design and construction problems involved in this type of work. Basic construction, of course, required only traditional methods. But there were three important problems that made the design somewhat special:

• The challenge inherent in dealing with large structures of this type.

• The need to incorporate small, precision components in the structure.

• Coordinating the highly complex mechanical systems employed for the functioning of the unit.

The tower is 135 ft high to the top of the penthouse. It is supported on four motorized trucks with 24-in. wheels that run on four 175-lb rails. The rails are mounted on a base unit called a transfer table, on which the tower is transfered from its parking area to the test stand and back. This table is a 46 x 61-ft fabricated steel unit weighing 100 tons and equipped with its own diesel electrical power plant and control apparatus. Controls are concentrated in a cab and, by means of an interlocking arrangement, electric current can be applied to move either the tower or the transfer table—although not both simultaneously.

The combined unit (transfer table and tower) weighs 475 tons. It travels to and from the launching stand on two 175-lb rails spaced 55 ft apart and extending a distance of 580 ft to the parking area. When the tower is brought to the launching stand, it is rolled off the transfer table onto a trestle. It moves over the trestle to a position where it envelopes the launch-

ing stand mechanism, and where the permissible clearance between items on the test stand and the tower is only one-half inch. Obviously there had to be a perfect match between the four rails on the transfer table deck and the four rails on the launching stand trestle.

There were three facets to this design problem: The table and trestle rails had to be accurately aligned. The end clearances between them had to be as small as possible and still not allow contact and consequent damage. And the tower had to move to and from the launching stand trestle with a minimum of shock.

By locating limit switches along the ground level rails and by using inching buttons, careful movement of the tower could be assured. Then the clearance requirement was met by providing crowding or lead rails (also 175 lb) along the ground level rails. The ground level rails lead the table with its tower load to a predetermined position that left $\frac{1}{8}$ in. between the heads of the transfer table rails and launching stand trestle rails.

By keeping the $\frac{1}{8}$ in. clearance, the shock problem was solved.

• **Structural makeup**—The tower and transfer table structures were fabricated from standard structural steel shapes, using welding for all shop connections and high tensile bolts for the field joints.

The main transfer table framing consists of 36 WF 182 beams.

In the tower structure, the bottom section is in the form of a box truss whose bottom members or sills are 18 WF 96 beams. The diagonals and other members are of lesser size. Nevertheless, the box truss weighs approximately 30 tons. The tower legs are 8 x 8 x $\frac{3}{4}$ in. angles, braced with diagonals made of angles placed back to back.

Framing for platforms throughout the tower consists of channels and angles, shop-welded where possible to form a rigid structure. Framing for the penthouse consists of 3-in. channels to which are welded $\frac{3}{8}$ in. plate. Since the penthouse is to be pressurized, the welding must be good enough to produce an airtight joint.

The design of the structural components of the tower and transfer table was influenced to a great degree by the fact that fabrication was to be done some 3,000 miles from the point of use. Therefore, it was mandatory that shipping pieces be kept to a size that could be transported and handled by conventional methods, at the shipping point and the erection site.

The components also had to be designed for rapid assembly. For example, the platforms were shipped as units with decking in place.

The major structurals for a second tower were erected in 14 days from the time they were received at the site. Erection was accomplished with a 30-ton truck crane and a crawler crane with 155-ft boom and jib.

• **Mechanical equipment**—There were also many design problems connected with the mechanical components of the tower.

For example, the specifications called for all electrical control equipment to be placed in explosion-proof cabinets. But investigation showed that cabinets to house the control components of the transfer table and tower would be too large to be practicable. Some other means was needed to assure an explosion-proof atmosphere.

The solution was a small blower mounted on the exciter and connected by V-belts to the exciter extension shaft. By this arrangement air is drawn from an uncontaminated area, circulated through the control unit, and discharged into a nonexplosive area.

The high moisture content of the Florida atmosphere created another circulation system problem. To reduce the humidity the air is passed through a "dry-box" before entering the electrical control unit. This "dry-box" is equipped with a desiccant (drying) type of chemical sandwiched between corrosion resistant wire mesh and hung in a herringbone pattern. Air passing through the box is forced in and around the desiccant, thus assuring that it will be moisture-free.

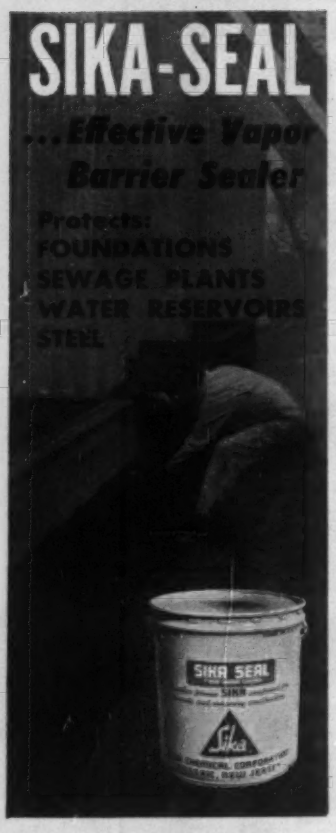
Numerous other mechanical equipment problems had to be solved, but for the most part they were those normally associated with such items as elevators, hoists and piping.

The tower has two 2500-lb-capacity elevators located along opposite sloping sides and operating at 300 fpm. The controls are located in the penthouse along with the motor generator sets that furnish power for the several hoists.

One of the hoists is a 10-ton underhung utility unit, operating at the base of the penthouse on rails 44½ ft long. It is used for miscellaneous loads and to raise and lower all hinged platforms in the tower.

Another is an erection hoist used to raise the missile and its carrier trailer to vertical position on the thrust mount. After the missile is locked in place, the hoist is also used to lower the trailer to the ground.

The tower contains a water deluge system, pneumatic system, sprinkler system and communications system, and all of these tend to complicate the design.



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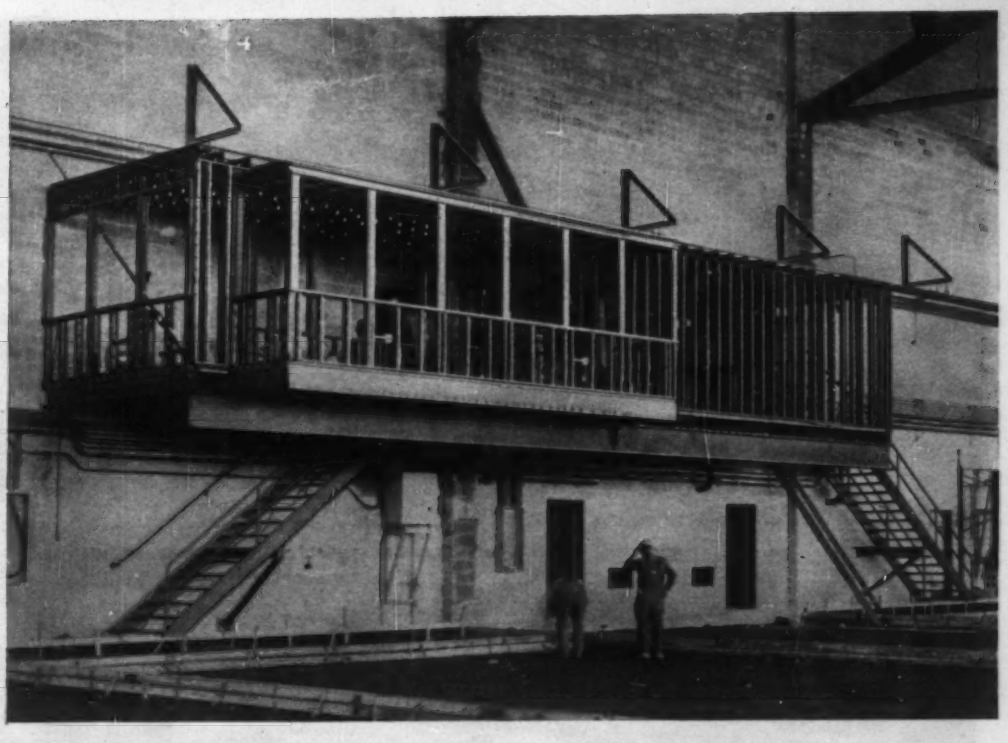
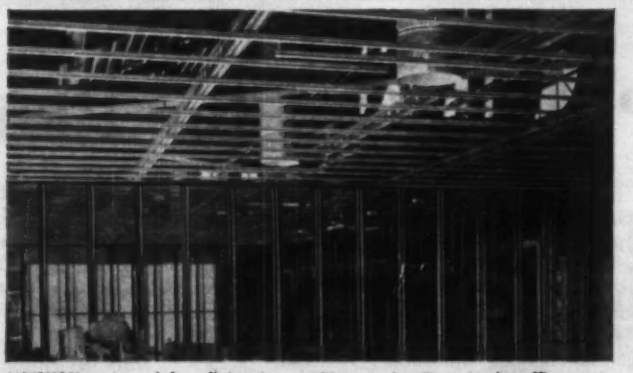


LIGHTSTEEL facilitated construction of suspended offices within hangar area.

Strength combined with light weight makes LIGHTSTEEL the ideal choice for TWA hangar



LIGHTSTEEL was used for all interior partitions and ceilings in the office area.

TWA HANGAR LOT FACILITIES

Architect Engineer: H. K. Ferguson Co., San Francisco
General Contractor: Barrett Construction Company
LIGHTSTEEL furnished by: Tayler Products Corp., Millbrae, Calif.
LIGHTSTEEL erected by: Jack Dymond Lathing Corporation

Trans World Airlines' hangar lot facilities in San Francisco measure 320 ft. by 176 ft. Most of this is hangar space except for an elevated two-story area in the front of the building—containing offices, commissary, lavatories, etc. The structural system is a single cantilever frame on 32 foot centers.

Penmetal LIGHTSTEEL was specified for all interior partitions and ceilings in the two-story section, and for suspended offices in the hangar section. The LIGHTSTEEL provided a rigid, permanent construction, but because of its light weight afforded considerable savings in structural steel. And, of course, it also contributed to the fire integrity of the building.

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Sanitary Fill Proves Out for Plant

Nathan A. Bowers
Consulting Editor

When San Francisco started disposing of refuse by the fill-and-cover method in 1934, there were modest hopes for success. But the operation has succeeded beyond the most optimistic expectations.

Fill now covers more than 200 acres, and some of the older sections are developed as industrial areas with several types of structures.

More than 75 million cu yd of refuse have been placed at one site on San Francisco Bay tideland, and there is talk of another 40 years in the same location.

The landfill operation is directed by one private company. Two scavenger firms collect and dump household and commercial waste. They coordinate their activities on the landfill site.

The scavengers' cooperative setup enables them to use an effective hand-sorting plan. Salvable material is sorted out in the large, open-top collecting trucks by the men who load them. Before a truckload reaches the dumping area, it is driven through a two-story sorting warehouse, and cartons or bundles of salvable material are unloaded. The four major items of salvage are bottles, paper, rags and metals.

Despite the daily salvage of 100 tons of newsprint, cardboard and other paper, paper still seems to make up a notable percentage of the refuse delivered to the fill.

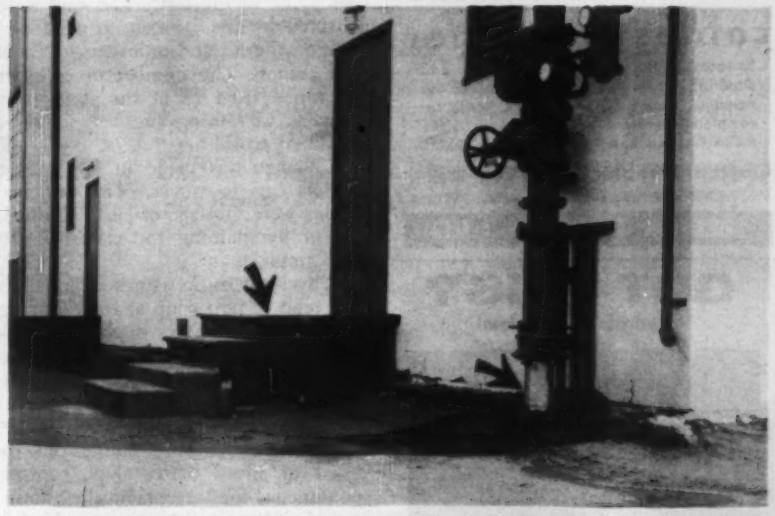
Some 1,000 to 1,100 tons of mixed garbage and rubbish (not counting salvage) are delivered daily. The material averages about 5 cu yd per ton, making a total daily volume of more than 5,000 cu yd.

The scavengers complete their work when the trucks weigh in and dump their loads on the fill. The Sanitary Fill Co., a corporation owned by the two scavenger companies, directs the dumping. The scavengers pay this company $1.15 per ton of refuse delivered. This covers all disposal costs, including spreading the refuse and excavating, delivering, and spreading cover material.

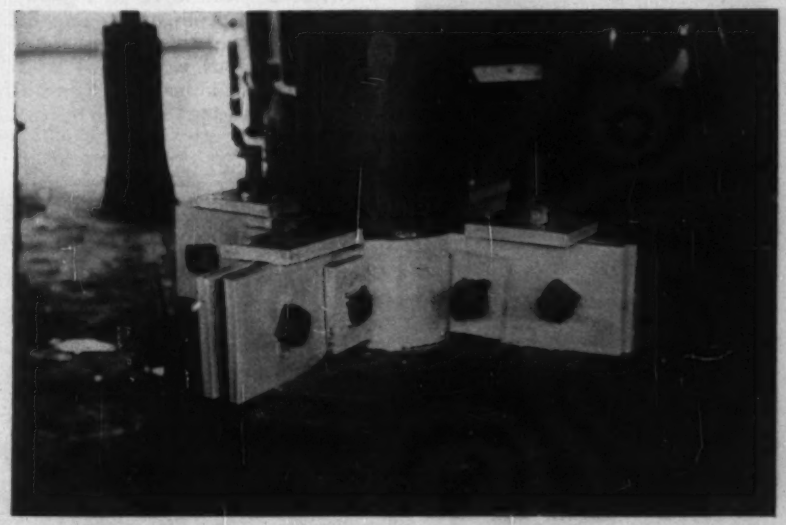
The cover, one to two ft deep, completely seals off the refuse on all sides. The covering is always completed the same day the fill is dumped. The disposal company operates under franchise from the Board of Supervisors and is subject to inspection by the Department of Public Health and the Department of Public Works.

The fill is located on San Francisco Bay tidelands under long-term lease from the Southern Pacific Co. to the disposal company. Southern Pacific also owned an adjacent hill from which cover material was blasted during the first 10 years of the fill operation. It yielded

Industrial buildings stand on older parts of fill.



New stoop, pipe extension solve settlement problems.



Adjustable columns level buildings when footings settle.

Sites

some 2 million cu yd of cover material, mostly rock with some earth.

The disposal company and the scavengers then acquired more hill lands. Now, with the additional tidelands available for fill, the present disposal operation could continue for probably another 40 years.

The fill adjoins the southern boundary of San Francisco in an incorporated sanitary district of San Mateo County. The sanitary district has granted the disposal company a permit-agreement similar to the franchise from the San Francisco Board of Supervisors.

The disposal company employs a general contractor to provide the necessary earth-moving, spreading and other equipment and for general management of fill operation.

• **Switch to trucks**—For the first 13 years refuse was delivered to the fill in gondola cars loaded at a central collec-

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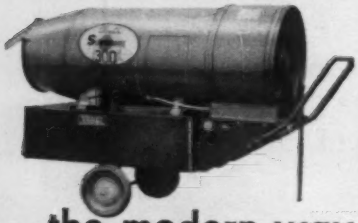

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Dump trucks replaced railroad cars to gain flexibility.

tion point in the city. The cars were delivered by the railroad to a balloon track on the fill and unloaded by clamshell cranes. The number of cars per day varied from 25 at the start to as many as 68 during the last years of World War II.

A change was made in 1947 from gondola cars to trucks. The principal reasons were shortage of labor and high cost of maintaining the clamshell-battered gondolas.

Delivery in trucks causes some delay; they tend to bunch up at the dumping point at certain times of day. This is difficult to avoid because of the quantity of refuse handled—some 350 truckloads per day.

However, several advantages offset this. Truck dumping points can be varied to afford better slope control; spontaneous fires are practically eliminated; bulldozing distances are shorter.

Refuse is spread in 12- to 20-ft lifts. Depending on depth, up to four lifts are placed, one on another, before reaching the final elevation at which the last lift is finished off. Estimated fill surface will be 18 or 19 ft above mean low water after a 25-year settling period.

• **Fast settling at first**—The fill settles rapidly at first, but, after the first few months, continues at a decreasing rate. Bench marks in various parts fill show that settlement is erratic and variable in different fills of the same age.

Some years ago workmen dug pits in 10-year-old fill and brought refuse to the surface from a depth of 9 ft, which was above the water table. After a decade of burial, there was little evidence of decomposition. Printed pages were still legible, tin cans were still bright and vegetable matter had not decayed.

This notably slow decomposition is attributed to the absence of oxygen and moisture in this part of the fill.

Cover material, to a considerable extent, seals out atmosphere and excludes rainfall. But more than that, organic matter in confined space generates its own "atmosphere" of marsh gas. This prevents entry of atmosphere and keeps the percentage of oxygen below that favorable to rodents and development of fly larvae.

In contrast, decomposition below the water table rapidly reduces all organic waste to a homogeneous condition. This decomposition may come about within six months along the face of the fill near the tide water. But it may take two years or more in inner parts of the fill.

• **Industry moves in**—The first industries to be established on the completed fill moved in about 11 years ago. They include a lumber yard that paved an area of some eight acres, and a metal-reclaiming firm that uses about 2½ acres. Both are on parts of the sanitary landfill that had been in place about

(Continued page 48)

Landfill: Past ENR Stories

Landfill starts on tideflats—
October 18, 1934, p. 501

Three years of experience—
February 27, 1936, p. 314

Fill disposal successful—
July 6, 1939, p. 59

Ten year conclusions—
April 22, 1943, p. 60 & 74

Disposal franchise renewed—
September 5, 1946, p. 296

Minimizing fire hazards—
January 8, 1948, p. 110

Trucks replace gondolas—
October 14, 1948, p. 110

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Currie's Woods Gardens housing project consists of two 13-story and five 14-story apartments. Work started July, 1957. Photo taken March 11, 1958.

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. . . Sanitary fill proves out for plant sites

13 years and were 25 to 30 ft deep.

The lumber yard added 2 ft of rolled fill before paving. The paving has settled fairly evenly about 1½ ft. However, some releveling has been required. It is believed work could be saved by:

- Allowing 18 to 20 years for settlement before building on the fill.
- Placing 4 ft of earth cover instead of 1 to 2ft.
- Establishing minimum drainage slopes of 1 to 1½%.

Foundation preparation for a warehouse in the metal-reclaiming yard included placing a 4-ft rolled fill on the 15-year-old fill. The steel-frame, metal-covered structure seems to have settled without appreciable distortion.

It stands on heavily reinforced concrete side walls with concrete footings for columns. To insure more uniform settlement, the floor area was covered with a heavily reinforced concrete slab about 2 ft thick, integral with side walls and column footings.

Seven years ago, on an 18-year-old area of fill about 20 ft deep, the scavengers built a group of buildings on pile foundations. Paved areas adjacent to these buildings have settled from 6 to 10 in., but the subsidence has been sufficiently uniform so that surface drainage has been affected only slightly. This settlement was anticipated and provided for by compensating grade at shop entries and expansion couplings for all surface supply lines and waste lines to buildings.

Six years ago three buildings were put up for truck shelter. One is 30 x 200 ft, the other two 56 x 325 ft. Each has a corrugated-iron roof carried on structural steel trusses with 6-in. pipe columns gripped at the bases by steel clamps.

The idea was to release the clamps and make adjustments for differential settlements by raising low points or lowering high points. In six years only one level adjustment has been necessary. This was after four years, when maximum adjustment between adjacent columns was about three in.

The rate of subsidence seems to be decreasing, so it's expected to be three or four years more before another adjustment will be necessary.

Until the summer of 1957, the small amounts of hydrogen sulfide from the fill created no public nuisance because the area was remote from residential and industrial districts. Then a six-lane freeway was built on the lee side of the fill. Now prevailing winds carry liberated gas to the highway when operations are carried on at low tide on the mud flats. Motorists have objected and corrective steps are being planned (see below).

The firm of Easley and Brassy has held the contract for operation of this fill-and-cover project since its inception. L. P. Brassy and W. D. Trewhitt, who took charge when the project started, have continued in that capacity to date.

. . . "Fill Smells," Say Riders on New Road

After 25 years, the sanitary landfill operation south of San Francisco has brought the first serious objections.

It started when a freeway was opened near the landfill in August, 1957. Since then motorists have been complaining about the odor.

Sanitary Fill Co., operator of the landfill, blames the highway. Company officials say odor was not serious until the freeway, on the lee side of the fill, formed a lagoon. Sanitary sewage, with a high percentage of industrial wastes, is discharged into the lagoon, they say, and stagnates instead of being dispersed by free circulation of tidal waters. State engineers claim the odor was always there but now 87,000 motorists a day are being exposed to it.

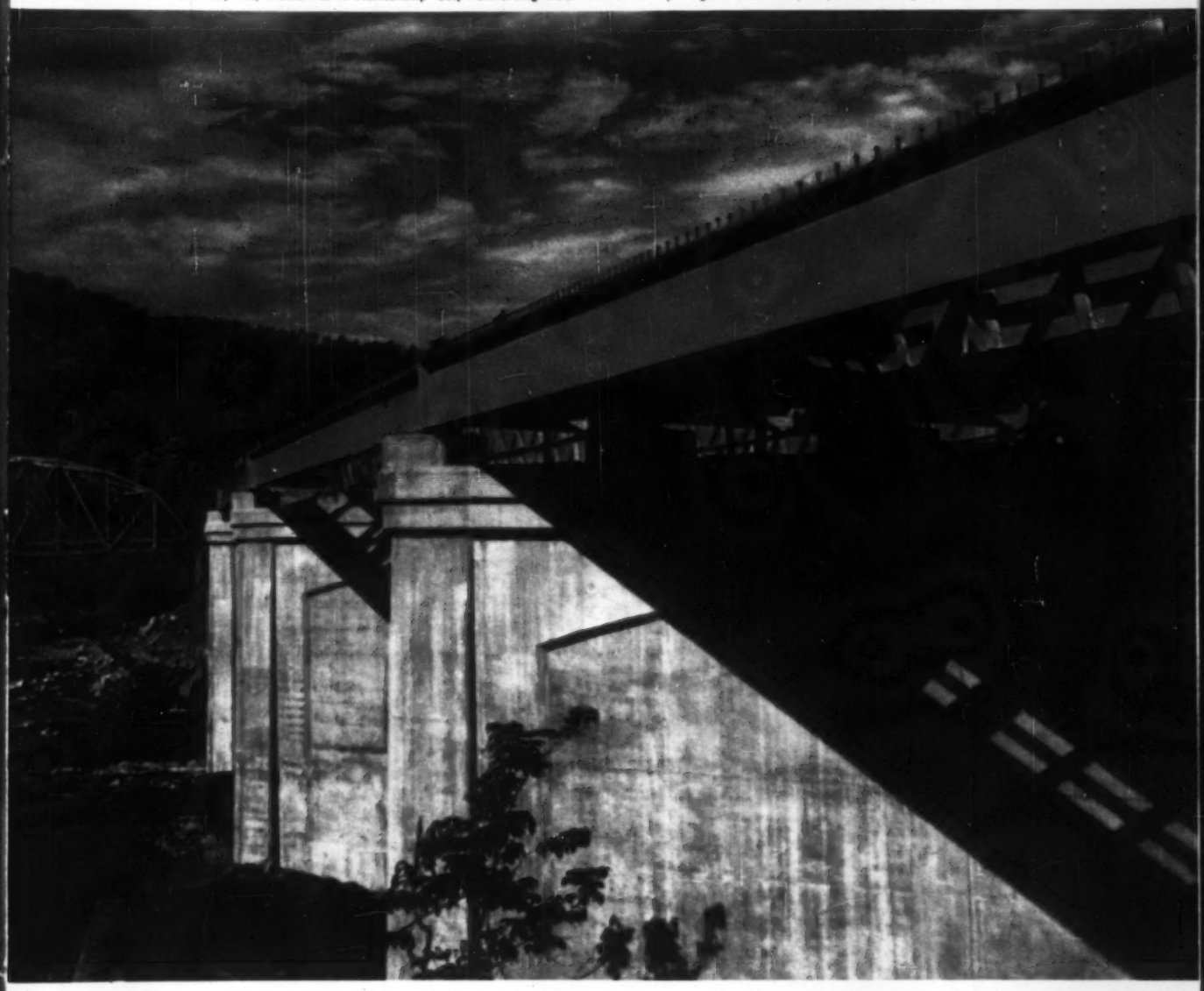
The San Francisco Bay Regional Water Pollution Control Board has prohibited placing refuse in water or on land reached by high tide. Evidently, the interaction of salt water and refuse results in release of hydrogen sulfide.

Sanitary Fill claims it has enough dry land to continue operations for only a few months.

The company has filed a $2 million claim against the state to pay for modifications of the landfill operations. It claims the state in building the highway causeway did not provide sufficient openings for exchange of water between the lagoon and the bay. Tidal action along the face of the fill had formerly greatly reduced gas liberation and resultant problems, the company says.

The company now wants the state to pay for two things: constructing dikes and draining the lagoon to permit fill and cover operations there; and constructing dikes on the bay side of the new highway to provide dry land for continuing fill-and-cover operations.

STEEL DOES THE JOB. Many tons of Bethlehem structural steel and reinforcing bars were used in this new dual bridge on Route 60, over the Jackson River near Covington. Fabricator: Roanoke Iron & Bridge Works, Inc.; General Contractor: McDowall & Wood, Inc.; Erector: E. F. Blankenship Co.; Reinforcing steel fabricated by Virginia Steel Co., Inc., and Montague Betts Co., Inc.



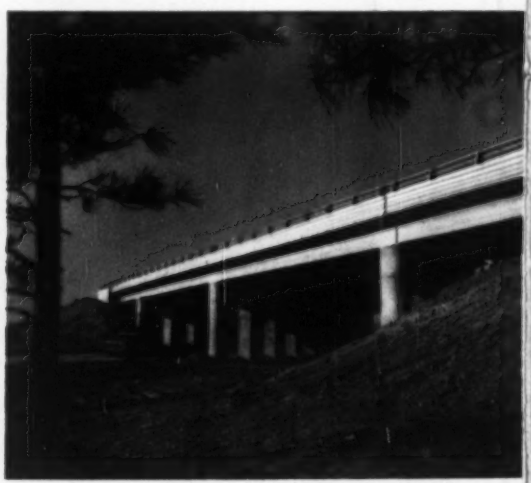
HIGHWAY PROGRESS IN THE

OLD DOMINION

BETHLEHEM STEEL

Steelwork for South Crossing of Turnpike's Appamattox River between Colonial Heights and Petersburg. This bridge is the largest of the Bethlehem-built structures on this new 4-lane traffic artery. Contractor for substructure and deck: Blythe Brothers Co.

Turnpike Authority chose structural steel for bridges because of its economy and durability. These Bethlehem Structural Shapes are in Wythe St. Bridge, Petersburg.



Lombardy St. Crossing, near northern end of Turnpike. This is one of 40 Turnpike structures erected in Richmond.

STEEL in many forms for Virginia's Highways

In Virginia they're not just talking about the need for better highways. They're doing something about it. A vigorous statewide highway improvement program has been under way ever since the end of World War II. During this 13-year period the Virginia Department of Highways has had the immense responsibility of allocating approximately $1,056,740,000 in highway funds.

Bethlehem has played a major part in this huge task of highway improvement—in fabricating and erecting the steelwork for bridges large and small, and in supplying a wide variety of highway steels. Some of this activity throughout the state is shown in the accompanying pictures. On page 4 is a long list of steel supplied by Bethlehem to the construction industry.

77 Bridges... and they're all steel

The Richmond-Petersburg Turnpike, a new high-speed toll road opened to traffic in mid-1958, contains 77 bridges in its 34.7-mile length. A large number of these were fabricated by Bethlehem for the Richmond-Petersburg Turnpike Authority. Four of the steel structures are shown at left, and immediately below.

BETHLEHEM STEEL

Bethlehem-built bridge carries the 4-lane Turnpike over right-of-way of Atlantic Coast Line Railroad, in Dinwiddie County.

NO DRAINAGE PROBLEMS WITH STEEL PIPE. This 48-in. culvert pipe, fabricated from Bethlehem galvanized sheets, is being installed by Wright Contracting Co., near Harrisonburg.

DRILL STEEL BITES DEEP INTO SANDSTONE. Crawler-type drilling rigs, fitted with Bethlehem Hollow Drill Steel, bore blast holes at site of overpass at intersection of Routes 11 and 33.

STEEL SINEWS FOR OVERPASS. Bethlehem Reinforcing Bars protrude from concrete columns during construction of bridge on Route 33. Contractor: Wright Contracting Co.

H-PILES TO SHOULDER THE LOAD. These Bethlehem H-Piles have been driven to bedrock for the foundations of a new bridge on Route 29 Bypass, which will skirt Lynchburg.

MOTORISTS FOLLOW THE BEAM. Bethlehem Beam Guard Rail, mounted on sturdy steel posts, installed along curve near Petersburg. Contractor: Blythe Brothers Co.

RAPPAHANNOCK RIVER BRIDGE. Bethlehem fabricated and erected 12,690 tons of steel for the superstructure of this cantilevered structure which spans the historic Rappahannock at White Stone, on Route 200, approximately 8 miles from Chesapeake Bay. It is the largest bridge ever built for the Virginia Department of Highways. Designers: Modjeski & Masters.

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Form wire
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Hardware, timber bridge
High-strength bolts
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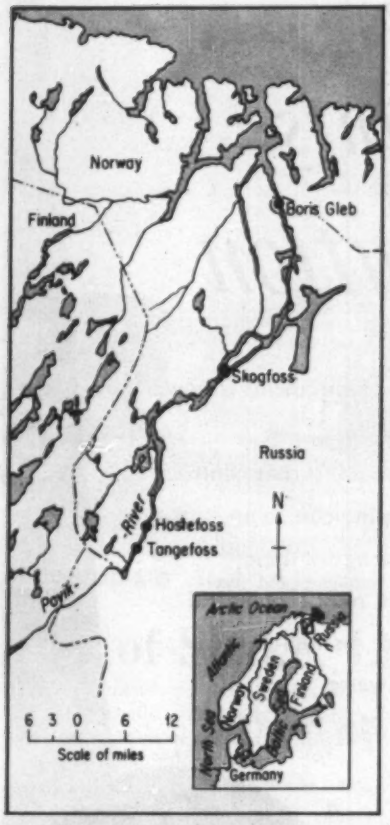

USSR and Norway Team Up On Pasvik Hydro Project

The Iron Curtain is parting slightly along the U.S.S.R.-Norway border.

Preparations are under way for the start of a Norwegian hydroelectric power plant early next year on the Pasvik River. The river is, for 70 miles, the border between the two countries.

The plant will be the first of four to be built along this stretch of the river under an agreement signed in May, 1957. Russia will build the other three.

The Norwegian project, called Skogfoss, will generate 64,000 kw and will cost $13 million. Russia's three plants—Boris Gleb, Hostefoss and Tangefoss—will produce a total of 80,000 kw.

Free access to both sides of the river for work forces of either nation is part of the agreement. And necessary space will be provided by the host nation without cost.

Under this interchange, Norway will build a diversion dam three miles inside the Soviet border, to block a secondary channel of the river at Skogfoss.

Norweigian contractors plan to try a further breach of precedent in Soviet-Western commerce by submitting bids on the first Russian plant, Boris Gleb.

Kaiser Gets $170 Million Brazil Steel Plant Job

Construction of a steel plant complex in Brazil has been awarded to the Heavy Construction Division of the Henry J. Kaiser Co. by Companhia Siderurgica Paulista of San Paulo, Brazil.

Kaiser got the job, valued at about $170 million, in bidding against at last two other companies. Work is scheduled to begin early in 1959.

Located at Piacaguera, north of Santos 80 miles in from the coast, the industrial package includes:

- Coal handling facilities and 25 miles of railroad track within the 1,200-acre site.
- Iron ore and limestone crushing and screening equipment, a sinter plant and 53 coke ovens.
- Blast furnace, soaking pits and two 60-ton processing furnaces.
- Slab and plate mills, a 66-in. hot strip mill and continuous pickling line.
- Galvanizing equipment and a cold reducing mill.
- A 30,000-kw steam power plant.

The complete facility will have an initial annual capacity of 330,750 tons of rolled steel products.

Kaiser Engineers, International, Inc., and Kaiser Engenharia Construcoes, Ltda., will provide consulting engineering services, purchasing assistance and construction supervision.

International Group Plans Congress in Stockholm

The International Association of Bridge and Structural Engineers plans to hold its 6th Congress in 1960 in Stockholm, Sweden.

The Stockholm meeting will run from June 27 to July 1. It will cover all phases of metal and concrete design including prefabricated structures.

The Permanent Committee met in Istanbul to plan the program. Deadline for submitting papers for the Congress is December 31 of this year. All papers should be sent to I.A.B.S.E., Swiss Federal Institute of Technology, Zurich, Switzerland.

Japan Seeks $200 Million For Tokyo-Osaka Railroad

Construction of a $600 million railroad between Tokyo and Osaka will begin next year, if the money is made available.

Japan's Transport Minister, Mamoru Nagano, is seeking a $200 million loan from the World Bank to help finance the broad-gauge Tokaido trunk line.

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Effectively controls moisture loss for 28 days and beyond.

Assures uniform curing even in hot, dry weather.

Helps reduce checking, cracking, spalling.

Produces harder, dust-free surface.

Eliminates waterproofing concrete floors.

Permits adequate time for smooth troweling.

Send for technical bulletin and Contractors Case History file.

A proved bond breaker for pre-cast, tilt up and lift slab construction. Permits easy, clean separation of slabs, walls, pre-cast members.

Available in 5 and 55 gallon drums from building supply stores, paint and hardware dealers.

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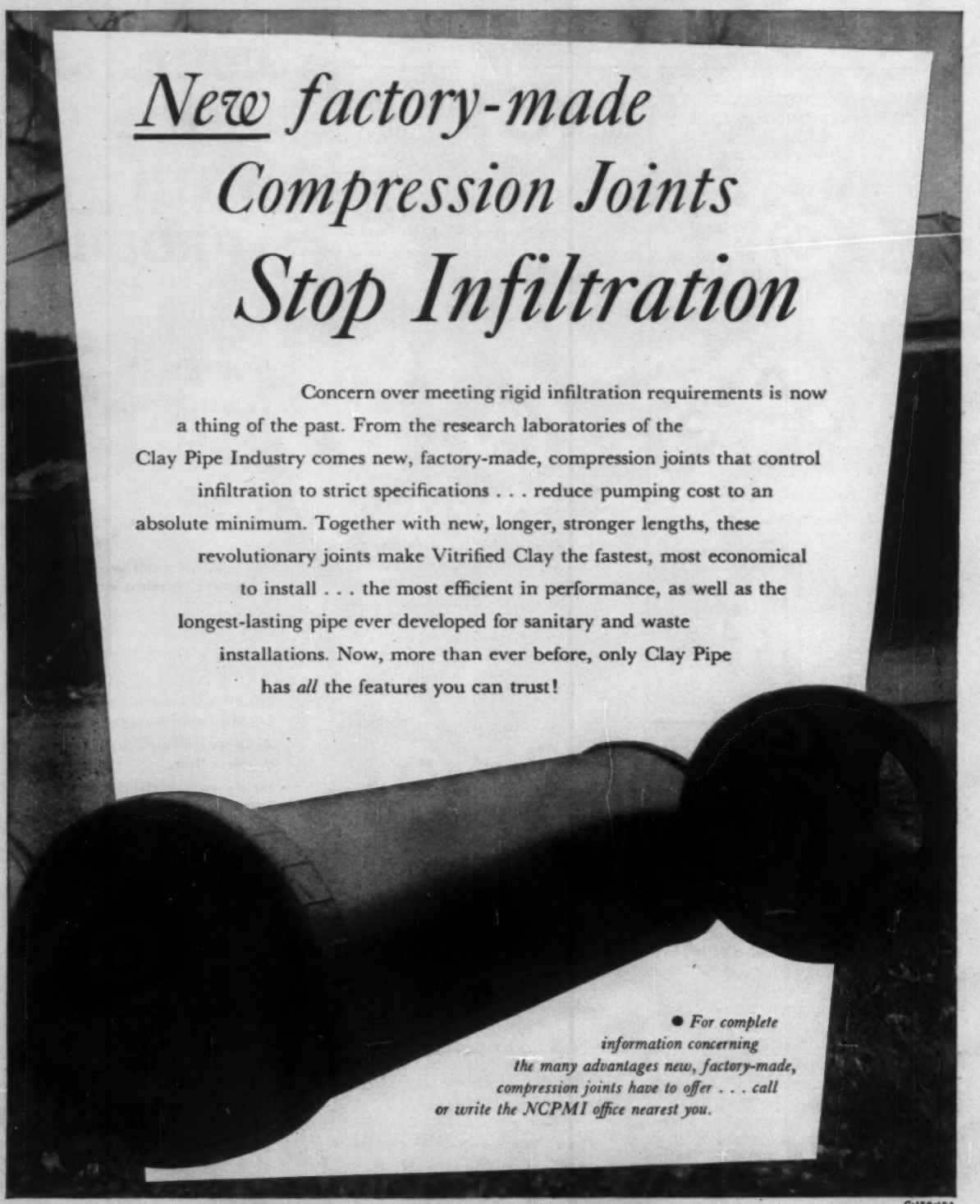

New factory-made Compression Joints Stop Infiltration

Concern over meeting rigid infiltration requirements is now a thing of the past. From the research laboratories of the Clay Pipe Industry comes new, factory-made, compression joints that control infiltration to strict specifications . . . reduce pumping cost to an absolute minimum. Together with new, longer, stronger lengths, these revolutionary joints make Vitrified Clay the fastest, most economical to install . . . the most efficient in performance, as well as the longest-lasting pipe ever developed for sanitary and waste installations. Now, more than ever before, only Clay Pipe has *all* the features you can trust!

● *For complete information concerning the many advantages new, factory-made, compression joints have to offer . . . call or write the NCPMI office nearest you.*

C-158-12A

Vitrified **CLAY PIPE** *Never Wears Out*

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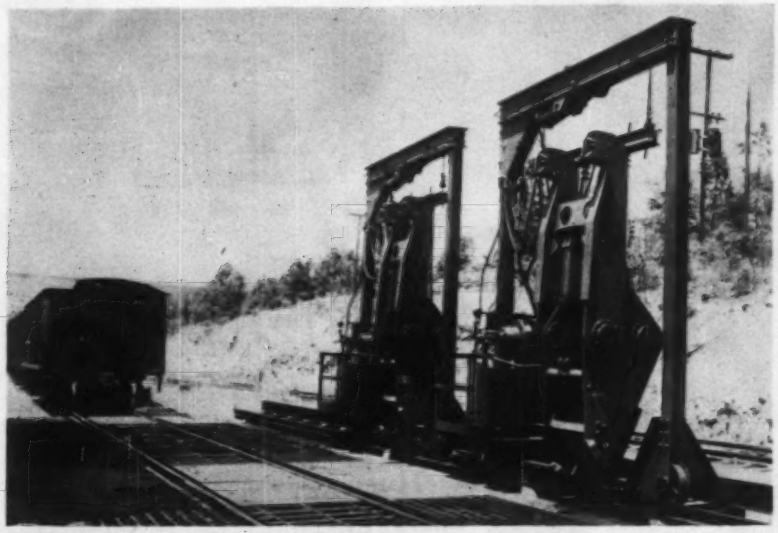


HYDRAULIC RIG unloads hopper-bottom railroad cars, with . . .

Lots of Shake, Little Rattle

A hydraulically powered car shaker is said to provide maximum efficiency, with a minimum of noise, in unloading hopper-bottom railroad cars.

The "Carquake" comes in two models. The stationary Type B is mounted by anchor bolts into the customer's concrete hopper foundation or steel structure. It is designed for use where only slight movement parallel to the car and track is needed.

The Type C is mounted on rails and propelled by a hydraulic motor. It can unload at any point along its travel. Concrete piers or a steel structure to take the rails are all the customer need furnish.

Clamping feature of the Carquake is aimed at making the shaker an integral part of each car structure to which it is attached. One man at a hydraulic board operates the shaker. Stephens Adamson Mfg. Co., Ridgeway Ave., Aurora, Ill.

Vibratory Compactors Set on Trailer

Vibratory pan-type compactors have been mounted on a trailer that can be pushed or pulled by most prime movers.

The workhead—which is remote-controlled by the operator—can be made up of three to six vibratory units. Also, two workheads of up to four units each may be used in tandem.

Each vibratory unit has its own motor and develops 6,000 lb of force at 4,200 rpm.

The power plant for the motors produces both single- and three-phase, 110-150 v, 60-80 cycle alternating current. Jackson Vibrators, Inc., Ludington, Mich.

New Process Turns Out Bigger Plastic Pipe

A new extrusion technique and die design is enabling Allied Chemical Corp. for the first time to manufacture polyethylene pipe in large diameters.

Sizes 4 to 8 in. are now being produced and a 22-in.-dia pilot is ready for production.

The pipe compound is made from virgin, high-density polyethylene at AC's Semet-Solvay Petrochemical division plant in Tonawanda, N. Y. Molecular structure consists of chains of about 70,000 carbon atoms in length compared to the average polyethylene chain of 2,000 carbon atoms.

Tests made at the company's Central Research Laboratory at Morristown, N. J., indicate the new pipe compound has a useful life expectancy of 50 years under pressures several times higher than those applied to conventional polyethylene. Further investigations show no cracking, slitting or pin holing.

In a typical test, say the manufacturers, the pipe was cycled 90,000 times to three times normal pressure for one second out of every 10 seconds, with no deterioration.

The plastic pipe can be put to a variety of uses in the sewage, water, industrial wastes and chemical processing fields. Joints are made by flanging the ends.

Sold under the name of Hi-Mol, the pipe can be obtained from Carlon Products, Aurora, Ohio. Allied Chemical Corp., 61 Broadway, New York 6, N. Y.

Lightest and Slowest 125 CFM Compressor

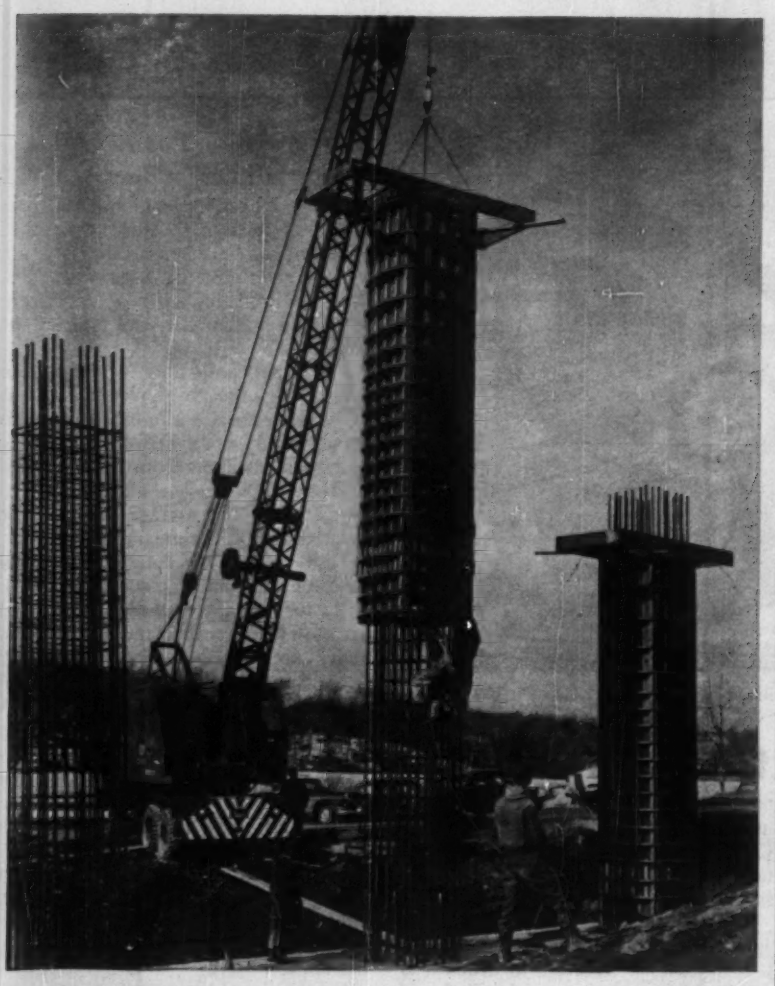
Le Roi calls its 125RG2 rotary air compressor the lightest and slowest 125 cfm on the market. It weighs 2,250 lb and runs at 1,600 rpm.

It is a sliding vane type, two-stage compressor with an in-line cylinder arrangement. It is rated at 125 cfm of free air compressed to 100 psi. A 100% capacity modulating control is said to match air supply to air demand within a pressure range of 10 psi.

Rotors have "double-life" feature: they can be turned end-for-end in the cylinder for a second term of slot life.

The rig is 10 ft, 7 in. long, 5 ft, 4 in. wide and 5 ft ½ in. high. The towing eye on the drawbar can be quickly replaced with a ball-and-socket hitch if needed. Le Roi Div., Westinghouse Air Brake Co., Milwaukee 1, Wis.

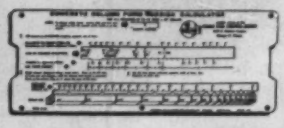
(*New Products continued page 56*)



Signode way saves 1/3 of form tying costs

Contractors tying forms with steel strapping are saving as much as 33% in labor and material costs. Signode strapping eliminates form hardware...is easily cut to length from the coil...is tensioned and sealed with tools one man handles readily...is stripped and disposed of quickly when forms are removed ...produces clean work that practically eliminates finishing time. And it is useful for many bundling jobs on the construction site. The Signode man near you is ready to help you cut form tying costs on your next job. Call him today, or write Signode.

Concrete column calculator simplifies form design



Your guide to proven, economical designs for concrete column forms. Shows strap sizes and spacings to use on forms up to 65" diagonal or diameter...illustrates six tested truss designs. Offer limited to architects, contractors, engineers. Mailed promptly on receipt of $1.00.

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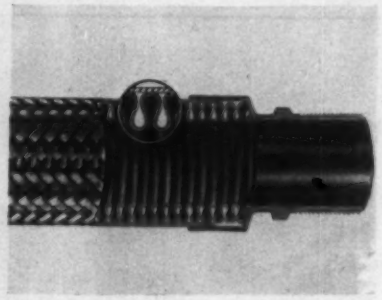

New Flexible Connectors Are Braided With Metal

New flexible metal connectors have been developed with a braid design that reportedly provides high burst strengths.

Known as Korfund Flex-Hose, these hose sections are designed to cut down transmission of vibration and pulsations into rigid piping. They isolate pipe lines from pumps, compressors, air conditioners or radiators that may create objectionable vibration. They also compensate for misalignment and reduce strain on piping.

The hose is constructed of corrugated seamless tubing, protected and reinforced by an outer braiding. Both the tubing and braid are made of bronze or steel, depending upon size and operation requirements.

The bronze unit has single bronze braiding and brazed fittings, for 12 pipe sizes from ¼ to 4 in. in lengths of 8 to 27 in. The steel hose has braid woven of braided steel wire and welded fittings, all hot-dipped galvanized, for seven sizes from 5 to 16 in. pipe in lengths of 31 to 72 in. For special applications, hose is also available in stainless steel and monel. Working pressures at 70 F vary with size up to 1,700 psi.

There are four standard end fittings: hexagonal or round threaded nipples, welding nipples, and full-faced flanged ends. The flanged fittings are made either fixed on both ends or with one floating and one fixed flange. One-year written guarantee goes with the hose. THE KORFUND CO., INC., 48-23M 32ND PLACE, LONG ISLAND CITY 1, N. Y.

Six-Ton-Crane Carrier Features Low Price Tag

A new carrier, the Model 400, has been designed for the Little Giant Model L 6-ton crane. The carrier is engineered from GMC banjo-type axles and 6x6 military-type chassis.

The company calls it the lowest-priced carrier for 6 to 8 ton cranes. LITTLE GIANT CRANE & SHOVEL, INC., E. 16TH & HOWARD DRIVE., DES MOINES 13, IOWA.

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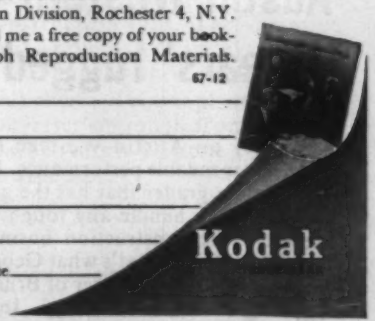

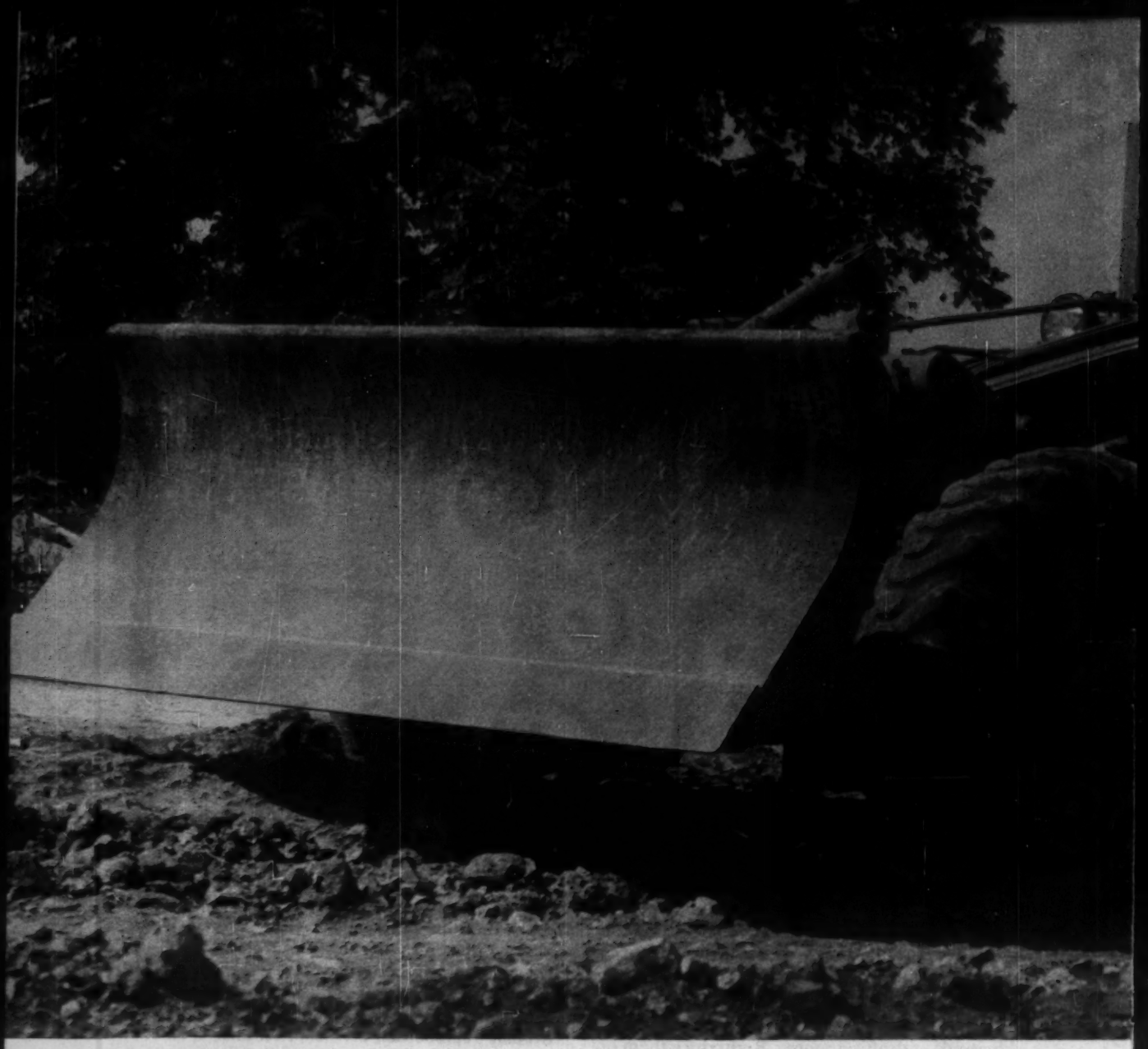

Austin-Western 6-wheel grader gives Buffalo contractor 5 years' rugged service... maintenance cost only $300!

"We rely on Austin-Western for rugged, dependable performance. It's one tandem grader that has the guts and power to handle any tough assignment the construction business can throw at it." That's what George Sheperd, general manager of Bruner Asphalt and Construction, Inc., Buffalo, N.Y., has to say about Austin-Western graders.

No downtime

"We just don't have maintenance problems and expensive downtime with our Austin-Western equipment. Aside from routine service requirements, it is hardly ever in the shop. We receive excellent cooperation from the A-W distributor on the rare occasions when we do require parts or service.

"In construction, perhaps more than any other business, time means money. That's why the A-W's ability to tackle even the heaviest of jobs and do them faster is so important to us. Of course, the fact that we can always depend on the A-W to stay on the job and help maintain project schedules is equally important.

Powerful 6-wheel Austin-Western tandem grader prepares bedrock surface for construction of a cloverleaf, part of the giant New York thruway project. Rear wheels are offset to compensate for sidethrust of fully loaded blade.

"A man can do a better job when he likes his machine. A satisfied operator and a top-performance grader make an unbeatable combination. Our operator likes the A-W. He says it is comfortable to operate, and so easy to maneuver that even in reverse he can get right in between 12-ft. forms.

Four main reasons

"All-wheel drive . . . all-wheel steering . . . hydraulic controls . . . torque converter—I'd say those are the four main reasons why we're sold on Austin-Western. They combine to deliver power, traction, maneuverability and precision control!"

Investigate. Learn now why contractors the world over are choosing Austin-Western for the really tough construction jobs. The versatile, hard-working A-W is available in 6-wheel and 4-wheel models with a wide choice of power plants. Torque converter optional. Contact your nearby Austin-Western distributor or write us.

Austin-Western CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.

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Power graders • Motor sweepers • Road rollers • Hydraulic cranes

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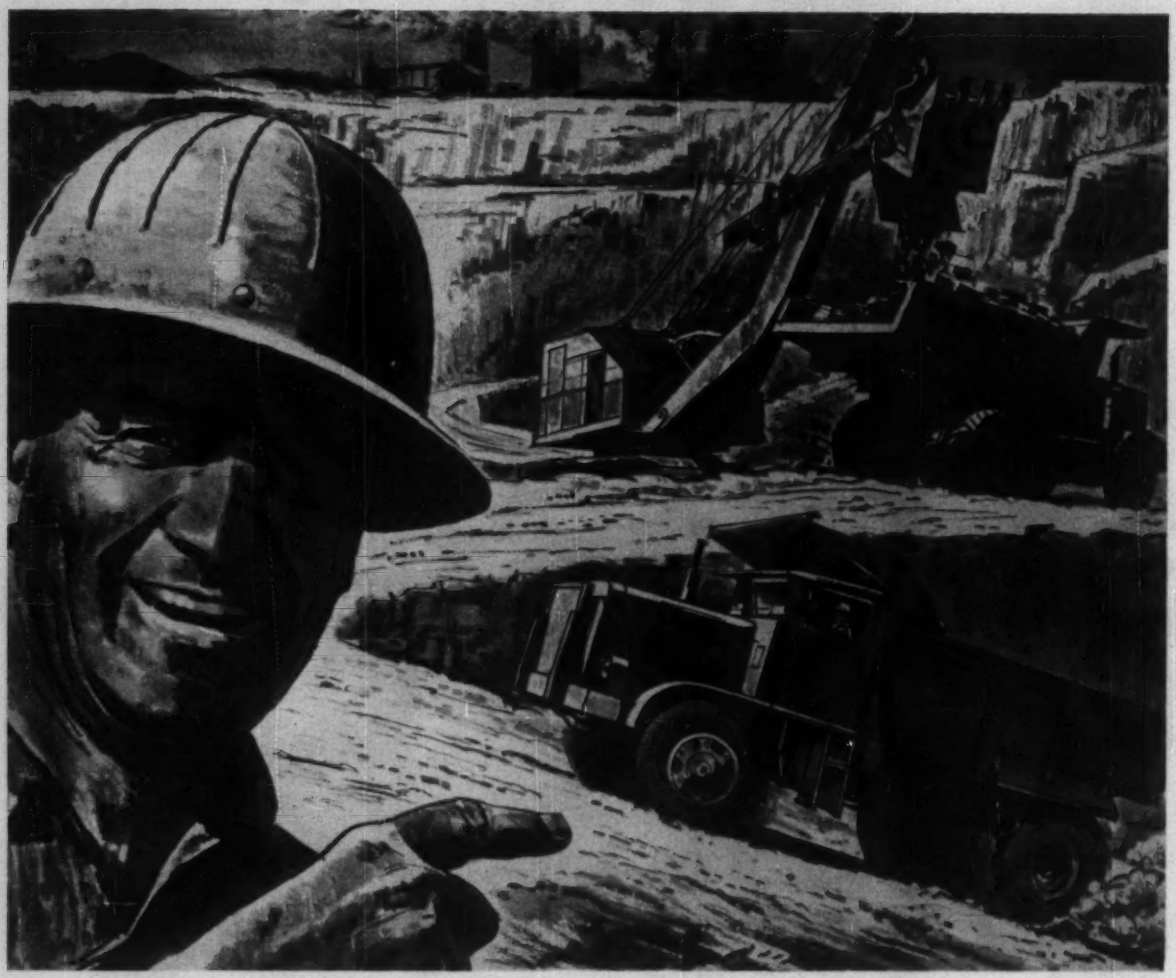

"Nothing speeds up round trips like *TORQMATIC DRIVE*"

Check with a job superintendent when he's checking his contract's timetable and he'll show you the big difference TORQMATIC DRIVES make on a job.

He'll show you, for instance, that trucks equipped with TORQMATIC DRIVE move 50%, 100% or even more payload per shift than stick-shift trucks.

He'll tell you that TORQMATIC's uninterrupted power flow means faster going upgrade . . . that its built-in hydraulic retarder means safer going downgrade . . . that it helps trucks wade through hub-deep mire or grasping sand that bring regular trucks to a crawl or a stall.

And when he gets down to maintenance and repairs, he'll show you really sensational equipment availability records.

It all adds up to faster contract completion, bigger profits per contract . . . the kind of records and cash you'd like to ring up.

If you're thinking about buying equipment, think about getting it with TORQMATIC DRIVE. It's available in almost any type of construction equipment you can name—or use. See your equipment dealer or write:

Allison Division of General Motors, Indianapolis 6, Indiana

Allison TORQMATIC

TORQMATIC® DRIVES

THE MODERN DRIVE FOR MODERN EQUIPMENT

Hunt to Succeed Jessup as Editor of Civil Engineering

Walter E. Jessup, editor of the American Society of Civil Engineer's magazine CIVIL ENGINEERING retired Dec. 1 after 28 years service with the society. He will be succeeded by Hal W. Hunt who has been executive editor.

Although Mr. Jessup had served as editor for the first five years after the magazine was established (1930-35), he was subsequently field secretary of the society and later its western representative in San Francisco. He became editor of CIVIL ENGINEERING for the second time in 1948.

Mr. Jessup is planning to live in San Marino, Calif. and resume the practice of civil engineering which he interrupted when he joined the ASCE.

A graduate of the University of Southern California, where he received an A.B. degree in 1910, Mr. Jessup continued his education at the University of Wisconsin. He earned a degree in civil engineering in 1912.

Mr. Hunt is a civil engineering graduate of the University of Iowa. After construction experience with several contractors and the Tennessee Valley Authority, he joined the staff of ENGINEERING NEWS-RECORD where he remained for eight years before returning to construction work.

Associated with Frederic R. Harris, Inc., New York, he engaged in pier construction in Portland, Ore., and airbase construction in Spain. Later, in Spain, he served as chief engineer for the contractor building the harbor facilities for the airbase at Rota.

Careers

Business

Walter E. Joyce, senior associate with D. B. Steinman, consulting engineer, New York City, has retired after 51 years of engineering work. He specialized in the design and construction of suspension bridges. He worked on the design of the George Washington Bridge at New York; the Golden Gate Bridge at San Francisco; and the Mackinac Bridge in Michigan. He was graduated from Yale University in 1907.

Three vice presidents were appointed by the Maxon Construction Co., Dayton, Ohio. They are: **Wilbur L. Jenks,** vice president for building construction; **Joseph C. Smith,** vice president for nuclear and heavy industrial construction; and **Thomas J. Scott,** vice president for marine and heavy construction.

Edward G. Herb is the new administrative vice president of International Engineering Company, Inc., a subsidiary of Morrison-Knudsen Company, Inc. He was with the New York international office of Morrison-Knudsen before coming to International Engineer-

Frank J. Pasquerilla, president of Crown Construction Company of Johnstown, Pa., has been elected president of Keystone Building Contractors Association in Harrisburg. Mr. Pasquerilla is a past vice-president of the U. S. Junior Chamber of Commerce.

Andrew Fletcher, president, St. Joseph Lead Co., and a past president of the American Institute of Mining, Metalurgical and Petroleum Engineers, has been elected president of United Engineering Trustees, Inc., whose big current job is seeing the planned United Engineering Center in New York through to a successful conclusion. Mr. Fletcher succeeds Walter I. Barrett of the New Jersey Bell Telephone Co., who has been UET president since 1955, and who is also the retiring president of the American Institute of Electrical Engineers.

Richard A. Bradshaw has been elected president of the Carolinas Branch of the Associated General Contractors of America. He is head of **L. S. Bradshaw & Sons, Salisbury, N. C.**

Obituaries

Thomas R. Mullen, 65, president, Lehigh Structural Steel Co., New York City and Allentown, Pa. Mr. Mullen joined the company as sales manager upon its formation in 1919. He had started in the steel business as a clerk with one of the early fabricating companies in New York. Active for many years in the affairs of the American Institute of Steel Construction, he had been a director and president of the organization.

Percy R. Banister, 66, founder of Banister Engineering Co., St. Paul, Minn. A native of Siblev, Iowa, he was a graduate of the University of Minnesota and the University of California. He was a member of the American Society of Civil Engineers and the Society of American Military Engineers.

Verne L. Udell, 70, vice president and treasurer of Nemec and Udell Construction Co., Cleveland, successor to Peck & Udell Construction Co. He had been active in heavy construction in the Cleveland area for almost 50 years.

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Operational Apron Blastproofed at . . .

Barksdale Air Force Base, La.

Bids were taken two ways for this blast deflector operational apron at the Barksdale Air Force Base, Shreveport, La. The $303,550 award by the Corps of Engineers, Little Rock, Ark., to T. L. James & Co., Inc., Ruston, La., is on the base bid. The contract is 6.5% above the engineer's base bid estimate but 4.8% below the second of the two bids.

Prices were also submitted on additive alternates, including additional excavation for shoulder paving, concrete and cement for the shoulders, and extra painting.

Almost 80% of the contract goes for blast deflector concrete pavement for blast pads, at $24.60 a cu yd, and for cement for the pavement at $5.60 a bbl.

The work includes construction of approximately 41,685 sq yd of 8 in. portland cement concrete paving; 13,750 sq yd of soil cement stabilized shoulder paving; 745 lin ft of storm drains, and appurtenant work.

The contractor supplies all the materials. Rail and truck transportation is available.

Wages on the job range from a high of $2.80 for skilled through $1.775 for semi-skilled to $1.575 for common laborers

The two base bids went like this:

1C	T. L. James & Co., Inc., Ruston, La.	$303,550
2	The Flersheim Co., Shreveport, La.	318,613
EE	Corps of Engineers, Little Rock, Ark.	284,899

Bids: 6-26-58 Items	Unit	Quantity	Unit Prices 1C	2
Concrete structures, modify	ls	job	$20,000	$3,500
Valve box, modify	ea	6	80.00	100.00
Sanitary sewer cleanout	ea	2	120.00	150.00
Inlet, type C	ea	3	600.00	500.00
Dry well	ea	9	400.00	250.00
Concrete sidewalk	sf	350	0.60	0.65
Electrical work	ls	job	7,500	7,700
Excavation, unclassified	cy	10,400	1.30	1.50
Concrete, 4"	cy	125	32.00	30.00
Subdrains	ls	job	1,200	1,500
Conc pavement for blast pads, except cement	cy	7,400	24.60	27.50
Cement for blast pad pavement	bbl	11,100	5.60	5.85
Laboratory bldg & services	ls	job	500.00	2,000
Gravel surfacing	cy	450	12.00	13.00
Identification painting	ls	job	900.00	5,400

Commence: 6-30-58 Completion schedule: 150 cal days
Liquidated damages: $25/cal day

Dike and Mattress Bids Top Estimate in Tennessee

Stone fill at $6.00 a ton accounts for 43.1% of this $167,060 contract for dike and lumber mattress construction at the head of Island 21, near Dyersburg, Tenn.

The award to Randolph Construction & Equipment Co., Memphis, by the Corps of Engineers, Memphis, Tenn., is 15.5% above the engineer's estimate, only 3% below the second, but almost 20% below the high bid.

The job includes bank grading, constructing, ballasting and sinking lumber mattress, placing gravel blanket, riprap paving, construction of root dike and placing stone fill along existing pile dikes.

Minimum wages include: tractor operators, $1.90; power shovel and crane operators, $2.65; common laborers, $1.10.

The five bids included:

1C	Randolph Constr. & Equip. Co., Memphis	$167,060
2	Pensacola Constr. Co., Kansas City, Mo.	172,190
5	Patton-Tulley Transportation Co., Memphis	209,360
EE	Corps of Engineers, Memphis, Tenn.	144,572

Bids: 9-25-58 Items	Unit	Quantity	Unit Prices 1C	2
Piles	lf	700	$3.00	$3.50
Lumber mattress	sq	1,170	28.00	26.00
Stone on lumber mattress	t	1,800	6.00	6.20
Riprap bank paving	t	6,300	6.00	6.20
Stone fill	t	12,000	6.00	6.20
Gravel blanket	t	1,000	4.00	5.20
Grading	cy	19,000	0.40	0.50

Commence: Nov. 1, 1958 Completion schedule: 75 days

Lively Competition on South Carolina Bridge

Prestressed concrete piling, 16 in. square, at $12-per-lin-ft took the $85,602 contract for this 330-ft bridge at the Lynches River on Roads 23 and 15, east of Camden, S. C.

The South Carolina State Highway Department awarded the job to Structures, Inc., Greenville, S. C., on a bid only $100 below the next low.

In addition to the reinforced concrete bridge, work includes 0.364 mile of earth graded and bituminous surfaced approaches. C. R. McMillan is chief highway engineer at Columbia.

The seven bids on this bridge included:

1C	Structures, Inc., Greenville, S. C.	$85,602
2	Carolina Dredging Co., Inc., Charleston, S. C.	85,702
7	Geo. A. Creed & Son, Columbia, S. C.	104,261

Bids: 9-16-58 Items	Unit	Quantity	Unit Prices 1C	2
Clear & grub roadway	ls	job	$2,000	$1,000
pits	ac	1	100.00	200.00
Excavation, unclassified	cy	20,329	0.50	0.50
Overhaul	Cyhm	41,736	0.05	0.07
Select matl for shoulders	cy	581	1.00	0.75
Base crse, earth type, pit matl	cy	1,362	0.50	0.50
Scarify, mix, etc	Msy	4,907	100.00	65.00
Bit surf, dble treat, type 1-8	sy	4,693	0.75	0.45
Conc, cl A, for structures	cy	457.8	65.00	68.00
Reinf stl for structures	lb	102,625	0.13	0.13
conc culv pipe, 15"	lf	20	3.00	4.00
18"	lf	20	4.50	6.00
Prestress conc piling, 16" sq	lf	1,560	12.00	12.50
index piles, 18" sq	lf	40	20.00	16.00
Conc block slope drains	lf	100	2.00	3.50
Rip for protecting slopes	t	300	10.00	9.00

Awarded 9-29-58 Completion schedule: 270 days
Liquidated damages: $20/day

When it's unhandy to position

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Low Cost **STOODY 1030**—*the rod that simplifies hard-facing jobs*—**in field or shop!**

POSITION WELDING—Here's a new Stoody Hard-Facing Rod for use on big equipment—parts that can't be positioned readily for welding! Stoody 1030 is easy to weld either vertical or downhand. The arc is smooth and stable with little smoke and low spatter. Runs AC and DC. Welds to carbon steel, manganese steel and weldable cast iron.

LESS WORK—With Stoody 1030 there's no slag to chip, deposits are bright and clean—ready for multiple passes and high buildups, if required.

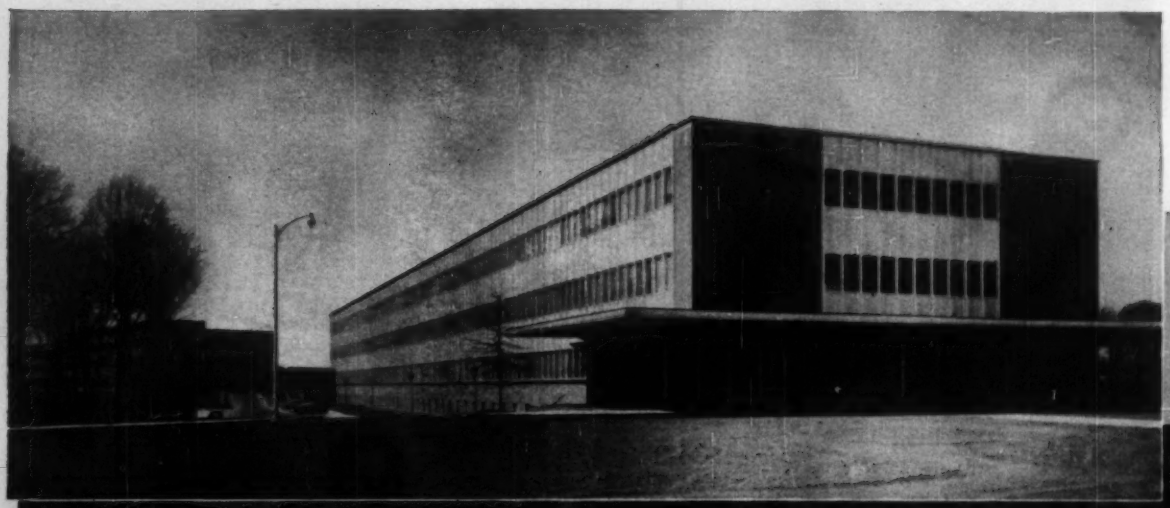
HIGH WEAR RESISTANCE—Users who know hard-facing metals know that high alloy content is the key to more wear resistance. *With 11.3% chrome, Stoody 1030 surpasses everything in its price class!* This means longer wear per hard-facing dollar!

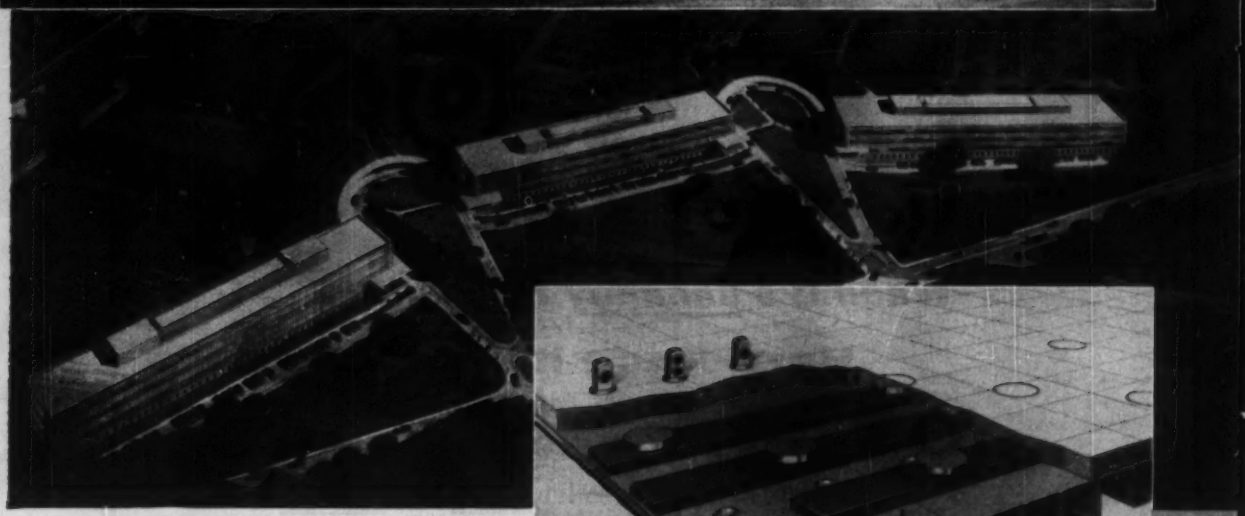
For high deposition rates, *more actual pounds laid down per hour*... for a *long lasting alloy* at a *low price* try Stoody 1030! It's available from any Stoody Dealer. Check the Yellow Pages of your phone book or write direct to the company. Literature available.

STOODY COMPANY

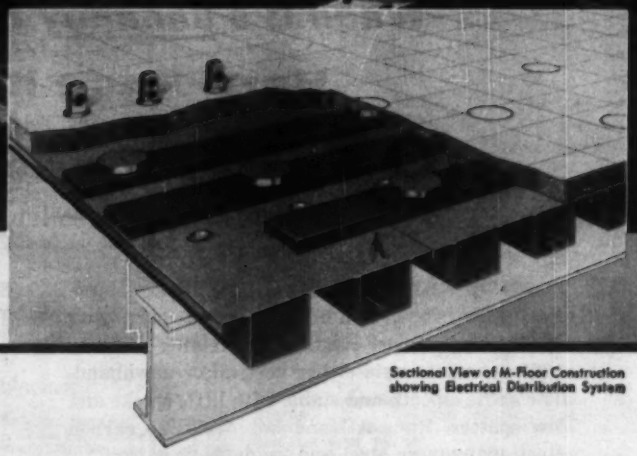
11906 East Slauson Avenue • Whittier, California

Mahon M-FLOOR Cel-Beam





The Three Ultramodern Ford Motor Company Staff and Product Engineering Buildings, illustrated here, are constructed with Mahon Electrified M-Floors throughout. Roofs of these Buildings and Connecting Canopies are constructed with Mahon Cellular Steel M-Decks. Architects: Voorhees, Walker, Smith & Smith, New York, N.Y. General Contractor: O. W. Burke Co.



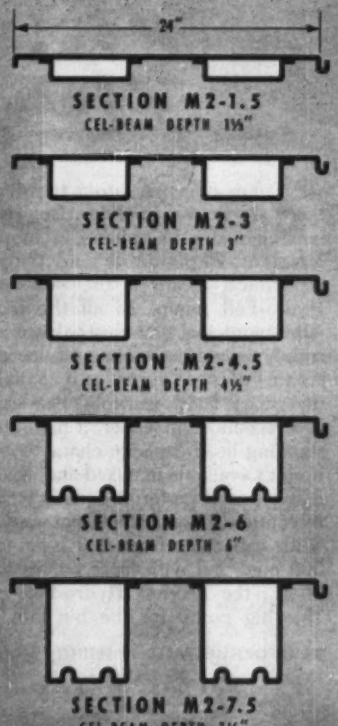
Sectional View of M-Floor Construction showing Electrical Distribution System

Serving the Construction Industry Through Fabrication of Structural Steel, Steel Plate Components, and Building Products

Sections Give You a More Practical and a More Efficient Structural Unit!

6″ Wide Cel-Beams Provide Adequate Raceway Capacity . . . Permit Greater Latitude in Location and Installation of Floor Service Fittings

MAHON
M-FLOOR SECTIONS



☆ OTHER MAHON BUILDING PRODUCTS and SERVICES:

- Insulated Metal Curtain Walls
- Underwriters' Rated Metalclad Fire Walls
- Rolling Steel Doors (Standard or Underwriters' Labeled)
- Steel Roof Deck
- Long Span M-Decks (Cellular or Open Beam)
- Permanent Concrete Floor Forms
- Acoustical and Troffer Forms
- Acoustical Metal Walls and Partitions
- Acoustical Metal Ceilings
- Structural Steel—Fabrication and Erection
- Steel Plate Components—Riveted or Welded

☆ *For INFORMATION See SWEET'S FILES or Write for Catalogues*

THE R. C. MAHON COMPANY • Detroit 34, Michigan
Sales-Engineering Offices in Detroit, New York and Chicago
Representatives in all Principal Cities

of Steel and Aluminum

MAHON

for effective liquid transfer

For effective liquid transfer there are several methods. But for moving water in volume, a most efficient, dependable and truly economical means is the Peerless Hydro-Foil pump. In all the big jobs: municipal or industrial water supply, condenser cooling service in steam plants, river and canal diversion, flood control – Peerless Hydro-Foil is the leader. It has outstanding head-capacity characteristics, it's available in mixed and axial flow types, it performs equally well in continuous or intermittent duty. With capacities from 600 gpm to 300 mgd and with head ranges to 60 ft., the Peerless Hydro-Foil is "the big pump for the big jobs."

WRITE FOR ILLUSTRATED BULLETIN No. B-148

PEERLESS PUMP

fmc FOOD MACHINERY AND CHEMICAL CORPORATION

FOOD MACHINERY AND CHEMICAL CORPORATION

Peerless Pump Division

Plants: LOS ANGELES 31, CALIFORNIA and INDIANAPOLIS 8, INDIANA

Offices: New York; Cleveland; Chicago; St. Louis; San Francisco; Atlanta; Plainview; Lubbock; Phoenix; Albuquerque; Los Angeles; Fresno. **Distributors in Principal Cities.** Consult your telephone directory.

Materials Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Clay Products, Lime, Plaster, Paint, Roofing: Last, Nov. 27: Next Dec. 25.
- Wage Rates, Building Board, Lath, Insulation: Last, Nov. 27: Next, Dec. 25.
- Cement Aggregates, Ready-mixed Concrete, Asphalt: Last, Dec. 4: Next Jan. 8.
- Iron & Steel Products, Pipe: Last, Dec. 11: Next, Jan. 15.

LUMBER, TIMBER, PLYWOOD—PER M FT., B. M., CARLOAD LOTS F.O.B.

SOUTHERN PINE AND DOUGLAS FIR

All Southern Pine is No. 2 common or better and for No. 1 N. C. Bev. (Prices in Bold Face)

All Fir boards, dimensions, planks No. 2, Fir small timbers and timbers are No. 1. Lengths up to 20 ft. (Prices in italics)

	1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh	LONG LEAF Y. P. Merchantable grade up to 20 ft. 2x12 Rgh	12x12 Rgh	PLYWOOD Rail freight increment (See note for base price) ¼"	⅜"
Atlanta †[1]	$78.00	$79.00	$78.00	$79.00	$81.00	$86.00	$136.00	.....	.....	$121.00	$156.00	$22.32	$27.24
Baltimore [2]	95.00	100.00	100.00	100.00	100.00	105.00	114.00	.....	.....	170.00	165.00	25.92	31.60
	108.00g	*108.00g*	*188.00g*	*188.00g*	*188.00g*	*188.00g*	*188.00g*	*$165.00*	*$149.00*			.....	.....
Birmingham †[1]	80.00	82.00	79.00	82.00	85.00	90.00	105.00	.....	.....	115.00	160.00	21.78	26.58
	70.50	*70.50*	*70.00*	*73.00*	*73.00*	*88.00*	*73.50*	*70.50*	*70.50*	.....	.....	.....	.....
Boston ***[3]	93.00f	95.00f	99.00f	99.00f	99.00f	100.00a	.....	.....	.....	.....	.....	25.92e	31.90e
	95.00	*95.00*	*109.00*	*109.00*	*109.00*	*109.00*	*189.00*	*189.00*	*162.00*	.....	.....	.....	.....
Chicago **[4]	110.00	113.00	107.00	121.00	129.00	130.00	125.00	.....	.....	153.00	153.00	22.45	27.37
	117.00	*116.00*	*139.00*	*137.00*	*137.00*	*148.00*	*134.00*	*138.00*	*136.00*	.....	.....	.....	.....
Cincinnati *[5]	93.00	94.25	88.50	90.50	95.00	102.75	116.00	.....	.....	129.50	127.50	25.00	30.48
	3.73	*96.00*	*94.00*	*102.50*	*98.00*	*114.50*	*127.25*	*127.25*	*127.25*	.....	.....	.....	.....
Cleveland **[6]	88.00	90.00	95.00	94.00	100.00	103.50	.....	.....	.....	.....	.....	25.37	30.93
	.....	.....	*102.00*	*102.00*	*100.00*	*102.00*	*115.00*	*115.00*	*115.00*	.....	.....	.....	.....
Dallas ‡[7]	74.50k	74.50k	72.00k	72.00k	74.50k	75.50k	120.00k	.....	.....	130.00	125.00	18.72	22.80
Denver *	*Not in stock*		*122.50*	*122.50*	*122.50*	*127.50*	*136.00*	*148.50*	*153.80*			13.92	16.98
Detroit ‡[8]	127.50	130.00	126.75	128.00	133.00	133.00	.....	.....	.....	141.00	.....	25.00	30.48
	136.00	*136.00*	*138.75*	*145.50*	*141.00*	*146.00*	*196.00*	*206.00*	*206.00*	.....	.....	.....	.....
Kansas City [9]	120.00	120.00	120.00	120.00	125.00	135.00	.....	.....	.....	.....	.....	16.56	20.16
	130.00	*130.00*	*130.00*	*130.00*	*135.00*	*135.00*	*160.00*	*225.00*	*225.00*	.....	.....	.....	.....
Los Angeles [10]	*94.00*	*94.00*	*94.00*	*94.00*	*94.00*	*94.00*	*196.00*	*131.00*	*131.00*	.....	.....	16.61ab	20.25ab
Minneapolis [11]	135.00m	135.00m	*140.00*	*140.00*	*140.00*	*140.00*	*185.00*	*185.00*	*185.00*	.....	.....	19.80	24.25
Montreal *[12]	87.00a	94.00a	87.00a	88.00a	104.00a	125.00a	.....	.....	.....	122.00	122.00	.....	.....
	165.00	*165.00*	*165.00*	*165.00*	*165.00*	*165.00*	*170.00*	*170.00*	*131.00*	.....	.....	.....	.....
New Orleans †[13]	89.00	89.00	83.00	91.00	90.00	97.00	121.50	.....	.....	151.00	151.00	18.72	22.80
	115.00	*115.00*	*104.50*	*125.00*	*125.00*	*125.00*	*137.50*	*137.50*	*137.50*	.....	.....	.....	.....
New York [14]	110.00	111.00	118.00	120.00	120.00	124.00	.....	.....	.....	240.00	250.00	25.92	31.60
	.....	.....	*118.00*	*119.00*	*119.00*	*180.00*	*168.00*	*168.00*	*168.00*	.....	.....	.....	.....
Philadelphia ‡[15]		Range from 100/120				105/125	105/125			214/224	214/224	28.00	32.00
		Range from 110/140				*115/145*	*125/150*	*164.00*	*164.00*	.....	.....	.....	.....
Pittsburgh [16]	118.00	120.00	130.00	120.00	125.00	130.00	150.00	.....	.....	180.00	185.00	25.92	31.60
	140.00	*140.00*	*140.00*	*140.00*	*140.00*	*140.00*	*220.00*	*185.00*	*185.00*	.....	.....	.....	.....
St. Louis [17]	118.00	118.00	128.00d	128.00d	126.00a	131.00a	.....	.....	.....	.....	.....	18.72	22.80
	.....	.....	*138.00*	*132.00a*	*132.00a*	*136.00a*	*188.00a*	*185.00a*	*188.00*	.....	.....	.....	.....
San Francisco [18]	*85.00*	*85.00*	*88.00*	*88.00*	*88.00*	*88.00*	*99.00*	*118.00*	*118.00*	.....	.....	12.22	14.91
Seattle [19]	*65.00*	*70.00*	*72.00*	*72.00*	*72.00*	*72.00*	*80.00*	*90.00*	*90.00*	.....	.....	.....	.....
Toronto *	92.50a	93.50a	93.75a	96.00a	99.00a	99.00a	.....	.....	.....	90.00	.....	.....	.....
	108.00	*106.00*	*109.00*	*113.00*	*116.00*	*119.00*	*135.00*	*128.00*	*138.00*	.....	.....	.....	.....

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. tr. contr. CL. 1. Retail, LCL, at yard. *f* Retail, LCL, deliv. 2. Deliv. truck lots. 3. asd., truckload lots, 5/8 Mfbm 4. Pine trucklots, f. o. city; fir truck lots, f. o. b. yard. 5. For f. o. b. city price, add approx. $8 for pine, $35.00 for fir. LUMBER: Bold Face Type, Southern Pine. Italics, Douglas Fir. *a Spruce. *b Federal tax exempt, add 8% mun. & prov. tax. *c 5M lots. *d 8, 10, & 12 ft. lengths. *e 8 to 16 ft. lengths. *f Hemlock *g No. 1 common. *j 8 ft. lengths. *k No. 3 common. *l Incl rail rate from North west mills to San Francisco are $11.50 to $15.00 per M ft. bm. From Northern Calif. mills $9.00 by rail, $9.50 by truck. All rates for surfaced stock. For rough, add $3.00 to above figures. *m Up to 16' *R revised

PLYWOOD (Plyform, oiled and edge sealed): Douglas fir, 4' x 8' panels, 5-ply sanded 2 sides, carload lots, delivered per 1000 sq. ft. surface. Seattle base price, Interior, moisture resistant, ¼", $161.00; ⅜", $185.00. Exterior, waterproof, ¼" $165.00; ⅜", $185.00. For other centers add rail freight increment from table on proper size. *a Lower rate by water shipment. *b 50,000 lbs. minimum. *c Truck lots.

GLASS, EXPLOSIVES, CHEMICALS

WINDOW GLASS

Discounts from jobbers list, Feb. 1, 1950a

	Single or Double Strength A quality	Single or Double Strength B quality
Atlanta	78%c	78%c
Baltimore	74%d	74%d
Birmingham	82½%	82½%
Boston	73-10%	72-10%
Chicago	73%	72%
Cincinnati	74%	74%
Cleveland	74-2-10%	74-2-10%
Dallas	76%	76%
Denver	74%	74%
Detroit	74-10-10%	74-10-10%
Kansas City	76-10-10%	76-10-10%
Los Angeles	70%	76%e
Minneapolis	71-10%	71-10%
Montreal	40-10-5%bc	40-10-5%
New Orleans	75%	76%
New York	79-10%	79-10%
Philadelphia	74-10%	75-10%
Pittsburgh	72%	72%
St. Louis	73-10-10%	73-10-10%
San Francisco	80%	73%
Seattle	67%	73%

EXPLOSIVES

Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*

Atlanta	$0.2615
Baltimore	.2515
Birmingham	.2465
Boston	.2515
Chicago	.2515
Cincinnati	.2615
Cleveland	.2015
Dallas	.2690
Denver	.2665
Detroit	.2615
Kansas City	.2665
Los Angeles	.2640
Minneapolis	.2665
Montreal	23.05h
New Orleans	.2665
New York	.45g
Philadelphia	.2615
Pittsburgh	.2515
St. Louis	.2665
San Francisco	.2515
Seattle	.2640

Prices of 60% Ammonia Gelatin is $0.10 per lb. higher than 40% in U. S., $1.75 per 100 lbs. higher in Canada.

Glass: *a Jobbers' list price per box, 14 x 20, ss, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. *b sales tax extra. *c 77% or single strength. *d Discount 8/13/52. *e 77% for double strength.

Explosives: * Cartridges of 1¼", 1½", 1¾", 2", 2¼", 2½", 3" diameters. Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. *g In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $20.00 per trip. *h F.o.b. Bellewell (near Montreal), per 100 lb. forcite, 40%. Forcite 60%, $23.80

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C/L 25,000 lb. net	Tons	200 lb. lots
E of the Miss., except Fla and Me....	$0.2065	$0.2465	$0.2815
W of Miss. to Rocky Mtn. States, Fla. and Maine	.2115	.2515	.2665
Rocky Mtn. States	.2115	.2515	.2665
Pacific N. W. States	.2090	.2490	.2640
Pacific S. W. States	.2065	.2465	.2615

PILES, TIES F.O.B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail Pine*	By Rail Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.51	.....
12-in.—3-ft. from butt	6-in.	50 to 59-ft.	.54	.....
12-in.—3-ft. from butt	6-in.	60 to 69-ft.	.58	.....
12-in.—3-ft. from butt	6-in.	90 to 100-ft.	.....	.....
13-in.—3-ft. from butt	8-in.	91 to 100-ft.	.....	.....
14-in.—3-ft. from butt	6-in.	60 to 69-ft.	.58/.63	.....
14-in.—3-ft. from butt	6-in.	70 to 79-ft.	.78/.88	.93
14-in.—3-ft. from butt	8-in.	80 to 85-ft.	.88/.93	.94
14-in.—3-ft. from butt	8-in.	85 to 89-ft.	.....	1.00
14-in.—3-ft. from butt	8-in.	90 to 100-ft.	.....	1.02

* Pine piling over 80-ft. available only in limited quantities

RAILWAY TIES

Prices f.o.b. per tie box carload lots:

		6" x 8" x 8' Untr.	6" x 8" x 8' Tr.	7" x 8" x 8'6" Untr.	7" x 8" x 8'6" Tr.
Birmingham*	Hardwood, Grade 3	$1.70	$2.55	Gr. 5 $2.25	$3.33
	Grade 2	1.80	2.35	" 4 2.10	3.18
	Grade 1	1.15	2.00	" 3a 1.70	2.78
Chicago	Red Oak		3.80a		4.40a
New York	S. L. Sap Pine	2.00	4.00	3.00	6.00g
	Mixed Oak	2.50	4.50	3.50	6.50g
Philadelphia	Red Oak	2.85/4.05	4.40/4.60	3.20/3.40	4.40/4.60
St. Louis	Mixed Oak	2.65	3.40a	2.90h	3.70ah
San Francisco	Douglas Fir	2.12e	3.10ef	2.99e	4.52ae

Tr.—Treated; Untr.—Untreated. a Creosoted. c Empty cell. e Green f.o.b. cars. g 7 x 9 x 8' 6" * Add 75¢/tie freight charge to Birmingham. *h 7" x 9" x 9½"

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb.	$5.02
Chlorine cylinders, liquid, per lb. f.o.b. works	.11
Calcium chloride, 77-80%, flaked, 100-lb. paper bag, f.o.b. works, ton	31.00
Silicate of soda, 53 deg., in drums, f.o.b. works, per 100 lb.	2 65
Soda ash, 58%, in paper bags, per 100 lb. dense	1 90
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	2 05
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works	21 20

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, Reports
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BUILDINGS—BA

▲ **Conn., Hartford**—SCHOOL—BA 1/21—State P. Wks. Dpt., 165 Capitol Ave., Albert I. Prince Regional Vocational and Technical School, Flatbush Ave. $4,000,000. Russell F. Hills, 130 Washington St., archt. A. John Macchi, 57 Farmington Ave., engr. CD 2/28/57.

▲ **Mass., Boston**—OFF-STREET PARKING GARAGE—BA 2/17—City, Real Property Dpt., City Hall Annex, off-street parking garage, Central and Kilby Sts. $1,500,000. M. A. Dyer Co., 24 School St., archt. CD 1/11/56.

HEAVY CONSTRUCTION—LB & CA

▲ **VERMONT**—State Hy. Dpt., State House, Montpelier, Bids opened 12/5.
Olson Constr. Co., 56 Northfield St., Montpelier, Vt. LB $1,055,728. est. $1,100,000. hy. and bridge, U. S. Rte. No. 2, F-028-1 (1), Milton and South Hero. CD 11/26.

▲ **L & R Constr. Co. of Medford, Inc.**, 84 Main St., North Reading, Mass., LB $2,169,168, L-58-2, Contr. 1, hangar and lean-to bldg. at Logan Airport, EAST BOSTON, MASS. Commonwealth of Mass., Airport Management Bd., Div. Bldg. Constr., 38 Chauncy St., Boston, Mass. Bids Dec. 3. CD 11/6.

BUILDINGS—LB & CA

▲ **Ernest F. Carlson, Inc.**, 1694 Main St., Springfield, Mass., CA approx. $3,000,000, WHOLESALE FOOD TERMINAL, WEST SPRINGFIELD, MASS. Century Industrial Development Co., 1200 Main St., Springfield, Mass. Ernest F. Carlson, Inc., 1694 Main St., Springfield, Mass., archt.-engr. CD 3/16/55.

▲ **Ippolitoalutz**, 122 Shelleck St., Stamford, Conn., LB $2,423,000 (10 bidders) 2 story, garden APARTMENTS, 29 buildings, 206 dwellings. Proj. MR-58, STAMFORD, CONN. Stamford Housing Auth., 100 Myano Lane, Stamford, Conn. Bids Dec. 2. CD 11/11.

▲ **Windham Community Memorial Hospital**, Mansfield Ave., Willimantic, Conn., rejected bids Nov. 20, 3 story, 50 x 146 ft., brick, rein.-con., limestone trim South Wing HOSPITAL addn., WILLIMANTIC, CONN. $1,000,000. CD 11/26.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

▲† **N. J., Wrightstown**—APRONS—BA 12/30—U. S. Eng., 2635 Abbottsford Rd., Phila., Pa., access aprons, maintenance dock floor slabs and utilities, McGuire Air Force Base. No. 36-109-59-19. $1,000,000. CD 9/8.

BUILDINGS—BA

▲ **Pa., King of Prussia**—PLANT—BA 12/23—The Ballinger Co., archt.-engr., 1625 Race St., Phila., mfg. plant, paving, railroad siding and sewage disposal sys. for Phila. Gear Works Inc., G St. and Erie Ave. $2,000,000. CD 10/31/57.

HEAVY CONSTRUCTION—LB & CA

▲ **Lasker-Goldman Corp.**, 50 E. 42 St., New York, N. Y., LB $8,683,000 (9 bidders), structures and equipment, Coney Island Pollution Control Proj., 3d Stage, Brooklyn Boro, BROOKLYN, N. Y. Dpt. P. Wks., Rm. 2200, Municipal Bldg., New York 7, N. Y. Bids Dec. 3. CD 11/20;
Forsythe Plumbing & Heating Corp., 234 W. 55, New York, N. Y., LB $108,800 (13 bidders), plumbing, Coney Island Pollution Control Proj. (Brooklyn, N. Y.);
S & M Plumbing & Heating Corp., 601 W. 26th, New York, N. Y., LB $186,800 (9 bidders), heating and ventilating, Coney Island Pollution Control Proj. (Brooklyn, N. Y.);
L. I. Waldman & Co., Inc., 40-01-29th St., Long Island City, N. Y., LB $749,000 (10 bidders), electrical work, Coney Island Pollution Control Proj. (Brooklyn, N. Y.).

BUILDINGS—LB & CA

▲ **Wulster & Wulster**, State Highway 17, Ramsey, N. J. Owner Builds. $4,000,000, 150 HOUSES, West Saddle River Rd., Upper Saddle River, SADDLE RIVER, N. J. Rudolph Bolling, 40 Carol St., Ramsey, N. J., archt.

▲ **Wintz Bros., Inc.**, 1618 Sellers St., Phila., Pa. LB $1,022,000, general constr. Medill Bair HIGH SCHOOL and site imprvs., FALLSINGTON, PA. Pennsbury Jt. School Bd., Fallsington, Pa. Bids Nov. 25. CD 11/10.

▲ **Leimbach Constr. Corp.**, 3906 Hickory Ave., Baltimore 11, Md., CA $2,897,350, Westport HOMES extension, incl. 232 brick, concrete block units, Job MD-2-18, BALTIMORE, MD. City Housing Auth., 709 E. Eager St., Baltimore 2, Md. Bids Nov. 13. CD 11/18, under LB.

▲ **Henry A. Knott**, 2406 Greenmount Ave., Baltimore, Md., LB $2,010,000, 1 story, masonry, concrete, steel block Johnnycake JUNIOR HIGH SCHOOL, Kent Ave. and Johnnycake Rd. near Catonsville, TOWSON, MD. Baltimore Co. Bd. Educ., Aigburth Rd., Towson 4, Md. Bids Dec. 4. CD 11/17.

▲ **Hageman & Harris, Inc.**, 30 Rockefeller Plaza, New York, N. Y. LB Base Bid. $1,289,564. Total Bid. $1,324,014 (6 bidders) constr. HEADQUARTERS BLDG. Virginia Ave. and 24 St. N. W., WASH., D. C. American Assocs., University Women, 1534 Eye St., N. W., Wash., D. C. Bids Dec. 5. CD 11/21.

▲ **Compass Realty Co.**, 1400 Silverside Rd., Wilmington, Del., Owner Builds. $2,500,000, RESIDENTIAL DEVELOPMENT, near WILMINGTON, DEL.

SOUTH

HEAVY CONSTRUCTION—LB & CA

▲† **Blythe Bros.**, Box 989, Charlotte, N. C. and **Morrison-Knudsen Co., Inc.**, 411 W 5 St., Los Angeles, Calif., CA $2,648,715, apron and utilities, Hunter Air Force Base, SAVANNAH, GA. U. S. Eng., 200 E. St. Julian St., Savannah, Ga. Bids Nov. 28, CD 12/3, under LB.

▲† **Robert E. Lee & Co., Inc.**, 618 Monroe Dr., West Palm Beach, Fla., LB $2,183,274, imprv. Canal 41 Section 1 (Harney Pond Canal) and constr. Structures 70 and 61 Central and Southern Florida Flood Control, CIV ENG-08-123-59-24, FLORIDA, U. S. Eng., Box 4970, Jacksonville, Fla., Bids Dec. 2, CD 11/25.

▲ **KENTUCKY** — Commonwealth of Ky., Dpt. Hys., Frankfort,
R. R. Dawson Bridge Co., Bloomfield, Ky., CA $1,170,885, b. conc. Class I surf. 4.979 mi. Campbellsville-Columbia Rd. from near Burdick extending southerly to point 0.6 mi. north of Adair County Line, F 534 (2) SP 109-128, Taylor Co. Bids Nov. 7. CD 11/13, under LB.

▲ **KENTUCKY** — Commonwealth of Ky., Dpt. Hys., Frankfort,
Wood & Bush Co., 410 Ann St., Frankfort, Ky., CA $1,851,649, grade, drain 4.632 mi. and 3 bridges over Interstate 75-Covington-Lexington Rd., I-75-7(5) 160 SP 41-434, Grant Co. Bids Nov. 21. CD 11/25, under LB.

▲ **TENNESSEE**—State Hy. Dpt., Nashville,
Herman Larson, 4214 W. NW Hy., Dallas, Tex. CA $2,696,059, widening existing Aulon Viaduct and approaches Poplar Ave. between Union Ave. extended and Fenwick St. and constr. new viaduct and approaches between Union Ave. extended and Poplar Ave. in Memphis. Proj. U-050-1 (3), Shelby Co. Bids Nov. 14, awarded Nov. 22. CD 11/19, under LB.

BUILDINGS—LB & CA

▲ **Gilbane Bldg. Co.**, 90 Calverly St., Providence, R. I. CA Est. $2,500,000. 10 story MEDICAL TOWER BLDG. for doctor's offices, NORFOLK, VA. S. L. Nusbaum & Co., Agent, 148 Granby St., Norfolk, Va. Vincent G. Kling, 917 Corinthian Ave., Phila., Pa. and Louis A. Oliver & Herbert L. Smith, III, 333 W. Freemason St., Norfolk, Va., archts. Awarded Dec. 3. CD 3/27.

▲† **Smith & Turley, Inc.**, 1955 Poplar St., Memphis, Tenn., CA $2,429,668, 150 units, Capehart HOUSING at Robins Air Force Base, MACON, GA. Robins Air Force Base, Procurement Office, Macon, Ga. Bids Nov. 25. CD 12/4, under LB, Ga., Warner Robins.

▲ **Wm. A. Berbusse Jr., Inc.**, 322 Royal Palm Way, Palm Beach, Fla., LB $3,767,000. JAIL and SAFETY BLDGS., vicinity NW 12 Ave. and 17 St., MIAMI, FLA. Bd. Comrs. Dade Co. 10 Floor, Courthouse, Miami, Fla. G. R. Mayer, 5860 NE 2 Ave., Miami, Fla., consult. struc. engr. Bids Dec. 2. CD 10/10;
Decatur Iron & Steel, Decatur, Ala., LB $797,150. Base Bid. Jail equipment, (Miami, Fla.).

Jones-Mahoney Corp., 1715 Lemon St., Tampa, Fla., CA $977,995, CLASSROOM ADMIN. OFFICE BLDG., State University Temple Terrace, TAMPA, FLA. Florida State Bd. Control, 349 Plant Ave., University of South Florida, Tampa, Fla. Bids Oct. 28. CD 11/5, under LB.

▲ **J. S. Stephens & Sons**, 902 Rome Ave., Tampa, Fla., LB Base Bid $1,010,000, Total Bid $1,110,904, STATE AGENCY BLDG., Jefferson and Twiggs St., TAMPA, FLA. Bd. Comrs. State Institutions, Terry C. Lee, secy., Capitol Bldg., Tallahassee, Fla. Bids Dec. 2. CD 11/7.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲† **Ohio and Kentucky**—BA On Or About 1/20—U. S. Eng., 237 4th Ave., Huntington 18, W. Va., constr. locks, operations bldg. and guard walls for New Richmond Locks and Dam Proj., Ohio River, 1.7 mi. below Chilo, O. and approx. 34 mi. upstream from Cincinnati, O., right side of Ohio River in Clermont Co., O. and Bracken Co., Ky., CIVENG-46-022-59-42. CD 9/19.

BUILDINGS—BA

▲ **Ill., Chicago**—APARTMENTS—BA 12/23—Webb & Knapp, Inc., 104 S. Michigan Ave., two 10 story, 2 bsmnts., 540 unit apartments, 55 St. between Dorchester and Harper Aves., Hyde Park Improvement, $5,000,000. I. M. Pei, 383 Madison Ave., New York, N. Y. archt. CD 7/29/57.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Hy. Dpt., Columbus, Zone 15,
O.—**V. N. Holderman & Sons, Inc.**, 890 Oakland Park Ave., Columbus, O., CA $2,310,879, est. $2,583,000, Type T-71 5.268 mi. USR 52-19.58 Village of Chesapeake F-625 Proj. 623 Lawrence Co.; CA $4,888,107, est. $5,374,900, Type T-71 and structures 6.2 mi. USR 25 3.46 ACI-1101(11) Warren Co.;
O.—**Trimmer Constr. Co.**, 344 N. Hague Ave., Columbus, O., CA $166,357, est. $174,500, Type T-35 on B-20 0.503 mi. CR 125, DS-359(2) Proj. 616, Franklin Co.;
O.—**Engle Constr. Co.**, Box 86 McArthur, O., CA $948,646, est. $1,050,700, Type T-35 on B-20 and structure 5.623 mi. SR 160 (0.00-0.31) DS-167(4) Proj. 617, Gallia Co.;
O.—**W. J. Seidensticker Co.**, 3585 E. Fulton St., Columbus, O., CA $1,556,026, est. $1,468,600, Type T-71 and structures 2.718 mi. USR 35, 0.00-19.34 F-FG-605 (13) City of Dayton Proj. 618, Greene and Montgomery Counties;
O.—**S. J. Groves & Sons Co.**, 500 Westley Temple Bldg., Minneapolis, Minn., CA $4,714,419, est. $5,187,500, Type T-71 and structures, 4.147 mi. USR 25-15.60 Hamilton USR 50B-22.02 ACI-1101(16) ACI-1110(2) Hamilton Co.;
O.—**Foley Constr. Co.**, 5050 Orchard St., Cincinnati, O., CA $126,221, est. $138,600, Type T-35 on B-20 0.535 mi. CR 170 Village of North Bend DS-1269(1) Proj. 620, Hamilton Co.;
O.—**Arthur S. Langenderfer, Inc.**, 4690 W. Bancroft St., Toledo, O., CA $448,477, est. $468,800, Type T-35 and structures 5.269 mi. SR 108, (615-8.41) Village of Holgate, F-557(6) Proj. 621, Henry Co.;
O.—**Fischer Constr. Co.**, 4053 Clifton Ave., Cincinnati, Ave., Cincinnati, O., CA $3,075,928, est. $3,557,000, Type T-71 and structures, 5.286 mi. USR 25-0.49 ACI-1101(19) Proj. 625, Montgomery Co.;
O.—**S. E. Johnson Co.**, P. O. Box 29, Maumee, O., CA $359,937, est. $342,600, Type T-35 4.29 mi. SR 579-0.00 Wood SR 579(0.09) (1.06) (1.96) DS 156(5) Proj. 626, Ottawa Co.;
O.—**Tiffin Excavating Contractors, Inc.**, 94 Valley View Park, Tiffin, O., CA $99,966, est. $132,800, Type T-35 and structure 0.407 mi. USR 224 (9.55) (10.36) Proj. 629, Hancock Co. Grand total. $18,694,963. (Correction—project location and Owner). Bids Nov. 25. CD 12/5, under LB.

(Continued on page 70)

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of Interest to American contractors.

By Regions & Classes of Construction
(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED
New England — **Middle West**
Middle Atlantic — **West of Mississippi**
South — **Far West**
PROPOSED WORK
Water Supply — **Public Buildings**
Sewers, Waste Disposal — **Mass Housing**
Bridges — **Commercial Buildings**
Streets & Roads — **Industrial Buildings**
Earthwork, Waterways — **Unclassified**

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over
ENR Engineering News-Record
CD Construction Daily
For additional reports see Construction Daily.

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(Continued from page 68)

▲ **City of Warren,** City Hall, Warren, O., rejected bids Sept. 25, sewage disposal plant, WARREN, O. LB $3,215,000. CD 9/30, under LB.

▲ **Metropolitan Sanitary Dist. of Chicago,** 100 E. Erie St., Chicago, Ill., rejected bids Oct. 23, Southwest intercepting Sewer Contr. 15 Hodgkins, CHICAGO, ILL. LB $1,547,850 New Bids 12/11. CD 10/29, under LB.

▲ **Michael Pontarelli, Inc.,** 4248 N. Kilpatrick Ave., Chicago, Ill., LB $1,697,957 (10 bidders), Wrightwood Ave. Aux. outlet sewer, CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago, Ill. Bids Dec. 1. CD 10/22/57.

BUILDINGS—LB & CA

▲ **Fred Teitelbaum Constr. Co.,** 5526 N. Kedzie Ave., Chicago, Ill., CA $1,000,000, 1 story, 40,000 sq. ft. WAREHOUSE and OFFICE, Touhy and Tripp Aves., CHICAGO, ILL. Ansco Div., General Aniline & Film Corp., 247 E. Ontario St., Chicago, Ill. Friedman, Alschuler & Sincere, 223 W. Jackson Blvd., Chicago, Ill., archts.

▲ **Welso Constr. Co.,** 2434 W. Fletcher Ave., Chicago, Ill., CA $1,000,000, 1 story, 40,000 sq. ft. BOWLING ALLEY, 3700 N. Frederick St., CHICAGO, ILL. Henry & Marc Auerbach, 1150 Lake Shore Dr., Chicago, Ill. Erwin Fredrick, 75 E. Wacker Dr., Chicago, Ill., archt.

▲ **Henning E. Johnson & Sons,** 15339 Meadow Lane, Dolton, Ill. Owner Builds. $1,000,000. 35,000 sq. ft. DORCHESTER CLUB, incl. 2 50x110 ft. and 40x40 swimming pools, bath house, DOLTON, ILL. Fridstein & Fitch, 228 N. LaSalle St., Chicago, Ill., archts.

Center Constr. Co., Arlington Heights and Oakwood Rd., Arlington, Ill., CA $900,000, 1 story, approx. 75,000 sq. ft. FACTORY-OFFICE BLDG., incl. parking area in Centex Industrial Park, ELK GROVE, ILL. Groen Mfg. Co., 4536 W. Armitage Ave., Chicago, Ill. CD 10/8.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—LB & CA

▲ **MINNESOTA**—State Hy. Dpt., 1246 University Ave., St. Paul,

Brown & Leguil, Rte. 1, Mankato, Minn., CA $1,120,353, sand-grav. sub-base, grav. base, road-mixed bit. base and surf. 0.6 mi. and bridges Nos. 9403 and 9404, Blue Earth Co. Bids Oct. 17. CD 10/21.

▲ **KANSAS**—State Hy. Comn., Junction City, Bids opened 12/5,

Koss Constr. Co., 510 Iowa Des Moines Bank Bldg., Des Moines, Ia., LB $1,597,317, Pt. I, concrete pavement 6.881 mi. beginning approx. ½ mi. north of Abilene at K-15 Interchange; northeasterly on Interstate 70, LB $1,528,529, Pt. II, 7.3 mi. beginning on Dickinson-Geary Co line approx. ½ mi. north US-40, southwesterly on Interstate 70, SP 70-21 I 70-4(2) 274, Pts. I & II, Dickinson Co.; LB $1,488,739, concrete pavement 5.783 mi. beginning at Geary-Dickinson Co. line; easterly on Interstate 70, SP 70-31 I 70-5(21) 288, Geary Co. CD 11/20.

▲† **List & Clark Constr. Co.,** Railway Exchange Bldg., Kansas City, Mo., LB $1,509,130, est. $1,000,000 relocation 14 mi. of Frisco Ry., Keystone Dam, ENG-34-066-59-20, OKLAHOMA, U. S. Eng., Box 61, Tulsa, Okla., Bids Dec. 2, CD 11/24.

▲† **Lawless & Alford,** P. O. Box 600, Austin, Tex. CA $3,030,196, est. $4,050,475. ICBM and IRBM Training Facilities, Sheppard Air Force Base, ENG-41-443-59-16, WICHITA FALLS, TEX. U. S. Eng., Box 1600, Fort Worth, Tex. Bids Nov. 25, awarded Dec. 1. CD 12/1, under LB.

▲† **Western-Knapp Engineering Co.,** 650-5th St., San Francisco, Calif., LB $4,637,613, est. $5,376,457 powerhouse and switchyard for second power plant at Fort Peck Dam, Valley Co., ENG-32-015-59-4, MONTANA. U. S. Eng., Garrison, Riverdale, N. D. Bids Nov. 20. CD 9/24.

BUILDINGS—LB & CA

▲ **L. C. Halvorson Co. & Watson Constr. Co.,** Willow St., Minneapolis, Minn. (joint venture) CA $2,585,000, general constr. 4 story, bsmnt., sub-base CENTRAL LIBRARY with 69 x 159 ft. penthouse and 1 story section 148 x 159 ft. Nocollet Ave. and Fourth St., MINNEAPOLIS, MINN. City, P. Library Bd., 1001 Hennepin Ave., Minneapolis, Minn. Bids Nov. 14. CD 11/18, under LB;

Belden Port Co., 65 North 17th St., Minneapolis, Minn., CA $905,866, mechanical work Central Library (Minneapolis, Minn.).

▲ **Leo Shakofsky,** Carol Park Rd., High Ridge, Mo., Owner Builds, $1,500,000, 200 RESIDENCES, on half acre lots, Carol Park Sub-Division between High Ridge and House Springs, HIGH RIDGE, MO.

▲ **J. E. Dunn Constr. Co.,** 929 Holmes, Kansas City, Mo., LB $8,900,258, est. $8,500,000 (8 bidders), Wayne Miner HOUSING, KANSAS CITY, MO. Kansas City Housing Auth., 1220 Independence Ave., Kansas City, Mo. Bids Dec. 3. CD 11/11.

▲ **Arrow Heights Realty & Development Corp.,** Midland and Eldon Aves., Maryland Heights, Mo. Owner Builds. $1,500,000, 242 brick or aluminum siding, concrete, etc., RESIDENCES, MARYLAND HEIGHTS, MO.

▲ **Kaiser-Glick, Inc.,** 9630 Olive Street Rd., Olivette 24, Mo., CA Est. $2,000,000, nine 2 story, brick, concrete, etc. APARTMENTS, incl. 72 units to be known as Chieftain Manor Apartments, 9500 block of Olive Street Rd., OLIVETTE (ST. LOUIS 24 P. O.), MO. Chieftain Manor Apartments, Inc., 9630 Olive Street Rd., Olivette 24, Mo.

▲ **Twillman Constr. Co.,** 2052 Sun Valley Dr., St. Louis 21, Mo., CA Est. $5,000,000, 1,000 RESIDENCES and NEIGHBORHOOD SHOPPING AREA in Twill Manor Sub-Division, Hy. 94, 1 mi. north of ST. CHARLES, MO. Richard and Clarence Twillman, c/o 2053 McLaran Ave., St. Louis 21, Mo.

Murch-Jarvis Constr. Co., 718 Locust St., St. Louis 1, Mo., CA Est. $750,000, 1 story, 35,000 sq. ft. PLANT and WAREHOUSE, etc. in vicinity of Lindbergh Blvd. and Warson Rd., ST. LOUIS COUNTY, MO. Abbott Laboratories, North Chicago, Ill., and 4455 Duncan Ave., St. Louis 10, Mo. Wedemeyer & Hecker, 111 N. 4th St., St. Louis 2, Mo., archts.

▲ **James Stewart Corp.,** 2327 Langford St., Dallas, Tex., CA $1,750,000, 18 story, brick, stone, steel, etc. OFFICE BLDG., northeast corner 4 and Center Sts., LITTLE ROCK, ARK. Winthrop Rockfeller, Morrilton, Ark., Trammell Crow, 425 S. Field St., Dallas, Tex., and R. A. Lile, Pyramid Life Bldg., Little Rock, Ark. CD 11/3.

▲ **Northeastern State College,** Dr. H. E. Garrison, pres., Oklahoma City, Okla., rejected bids Dec. 1, 3 story, DORMITORIES and CAFETERIA, TAHLEQUAH, OKLA. $1,448,000. CD 11/25.

FAR WEST

BUILDINGS—BA

▲ **Wash., Olympia**—GENERAL ADMINISTRATION—BA 1/2—State Dpt. Admin., General Admin. Bldg., 5 story, bsmnt., 120,000 sq. ft. rein.-con. General Administration Bldg. addn. $2,000,000. Extended date. Haromon, Pray & Detrich, 2000 5th Ave., Seattle, Zone 1, archts. CD 11/10.

HEAVY CONSTRUCTION—LB & CA

▲ **IDAHO**—State Hy. Dpt., Boise, Bids opened 12/2,

James Reed, 779 S. 2 E. St., Salt Lake City, Utah, LB $1,281,999, constr. roadway, plantmix bit. surf., drainage structures and 3 concrete underpasses on 7.813 mi. U. S. Interstate No. 15 and sealcoat 7.341 mi. Jefferson Co. CD 11/13.

▲† **Henry Kaiser Co. & Raymond International Inc.,** 1924 Broadway, Oakland, Calif., CA $8,840,000, constr. rockfill Eagle Gorge Dam on Green River with crest length of 450 ft. and height of 235 ft. above river bed, Kanasket, Inv. 59-6, WASHINGTON. U. S. Eng. 1917 S. Alaskan Way, Seattle 4, Wash. Bids Nov. 21. CD 11/25, under LB.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles,

Winston Bros. Co., 1532 S. California Ave., Monrovia, Calif. CA $1,467,980. constr. interchange facilities San Bernardino Freeway at Sierra Ave. near Fontana and at Riverside Ave. in and near Rialto, San Bernardino Co. Bids Nov. 13, awarded Dec. 3. CD 11/20, under LB.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles,

E. L. Yeager Co., P.O. Box 87, Riverside, Calif., CA $1,532,114. conversion from expressway to full freeway 5 mi. San Bernardino Freeway between east of Ontario and Colton, incl. grade separation and interchange at Cherry and Citrus Aves. near Fontana, VIII-SBD-26-D, San Bernardino Co. CD 11/24, under LB.

▲ **Contracting Engineers Co.,** 2310 W. Vernon Ave., Los Angeles, Calif. LB $1,151,131. street imprvs. and electroliers, Hollywood Blvd. and Vine St. Imprvt. Dist., LOS ANGELES, CALIF. Los Angeles Bd. Pub. Wks., Los Angeles, Calif. Bids Dec. 3.

BUILDINGS—LB & CA

▲ **Johnson, Drake & Piper, Inc.,** 9009 San Leandro St., San Leandro, Calif. LB $2,149,000, est. $6,900,000. Phase 1, constr. rein.-con. work, minimum plumbing and electrical work for HALL OF JUSTICE, OAKLAND, CALIF. City, City Hall, Oakland, Calif. Confer & Willis, 366 40th St., Oakland, Calif., archts. CD 11/20/56.

▲ **American Bridge Div., U. S. Steel Co.,** 525 Wm. Penn Place, Pittsburgh, Pa., CA PLANT addn. and continuous annealing lines and equipment, Far West Div., PITTSBURG, CALIF. Columbia-Geneva Steel Div., U. S. Steel, Pittsburg, Calif. CD 9/11/52.

▲ **Hoefer Constr. Co.,** Box 425, Fontana, Calif. CA $1,771,380, Rubidoux HIGH SCHOOL, West Riverside, RIVERSIDE, CALIF. Riverside High School Dist., 3954 12th St., Riverside, Calif. Caughey & Ternstrom, 922 N. La Cienega Blvd., Los Angeles, Calif., archts. Bids Nov. 26, awarded Dec. 3. CD 11/7.

CANADA

HEAVY CONSTRUCTION—LB & CA

▲ **W. C. Wells Constr. Co., Ltd.,** 10519 115th St., Edmonton, Alta., LB $2,864,750 (17 bidders) various bldgs. and services and P.O.L. installation. Canadian Air Force Refuelling Base, NAMAO ALTA. Defence Construction (1951) Ltd., 56 Lyon St., Ottawa, Ont. Bids Nov. 20.

▲ **ONTARIO**—Dpt. Hys., Parliament Bldgs., Toronto,

Hacquoil's Constr. Co. Ltd., 1408 Brown St., Fort William, Ont., CA $1,092,570, grading, culverts, granular base 7.6 mi. Trans Canada Hy., and C.P.R. overhead bridge at Rossport (58-279). Bids Nov. 26, awarded Nov. 28. CD 12/3, under LB.

BUILDINGS—LB & CA

▲ **Adelard Deslauriers & Fils Ltee.,** 268 Lalement St., Quebec City, LB $1,778,700, 3 story, bsmnt., L-shaped 63 x 219 ft. and 42 x 139 ft. brick, masonry AGRICULTURAL RESEARCH LABORATORY, rein.-con. fdns., FREDERICTON, N. B. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. CD 12/27/44.

▲ **Thunder Bay Harbor Improvement Ltd.,** 19 Ruttan Block, Port Arthur, Ont., CA Total est. $2,000,000 foundation and dock for GRAIN ELEVATOR extens., PORT ARTHUR, ONT. Manitoba Pool Elevators, Wheat

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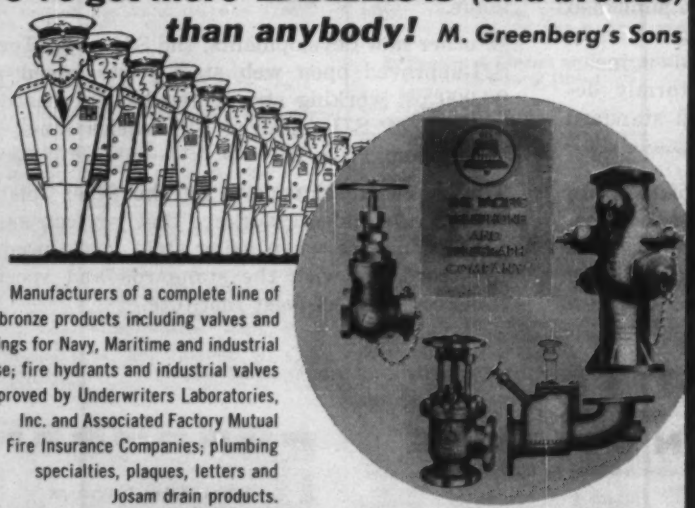

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Pool Bldg., Winnipeg, Man. Awarded Dec. 3. CD 12/2.

▲ **Reliance Constr. Co.**, 2205 Beaconsfield Ave., Montreal, Que., CA $1,000,000, 13 story, 60 x 68 ft. 94 unit steel, precast slabs, brick APARTMENT BLOCK, Dorchester S. W., MONTREAL, QUE. S. D. Development Corp., 2205 Beaconsfield Ave., Montreal, Que. Henry Jasen, 140 Guy St., Montreal, Que., engr. Awarded Nov. 28. CD 11/24.

LATIN AMERICA

HEAVY CONSTRUCTION—LB & CA

† **REPUBLIC** *of* **NICARAGUA**—Bureau P. Rds., Dpt. Commerce, Inter-American Hy. Division, Wash., D. C., U.S.A.,
rejected bids Nov. 20, Rama Road Project R-3C, 6 bridges, Muhan River to Mico River. LB $963,024. CD 11/21.

BUILDINGS—LB & CA

▲ **Berlanti Constr. Co.**, 15 Oakland Ave., Harrison, N. Y., U. S. A. CA $10,000,000, low cost HOUSES, CUBA, (5 year program) National Housing Comn., Govt. of Cuba, Havana.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Massachusetts**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Contr. 284 (1st section) Wachusett-Marlboro Tunnel, Clinton-Boylston-Berlin, Northboro and Marlboro. $9,000,000. Bids about Jan. 15.

▲ **O., Enon**—Village, Village Hall, WW sys. $1,500,000.

▲ **Tex., Dallas**—City, City Hall, voted bonds Dec. 2, WW. $15,000,000. CD 10/21.

SEWERS, WASTE DISPOSAL

▲ **Ill., Cahokia (East St. Louis P.O.)**—Village Bd. Trustees, Village Hall, exten. sanitary sewerage sys. Maplewood Park area. $2,500,000. David J. Johnston, 123 N. 3rd St., East St. Louis, consult. engr. CD 4/1/55.

▲ **Tex., Dallas**—City, City Hall, voted bonds Dec. 2, sanitary sewers $5,600,000; storm sewers $3,400,000. CD 10/21.

BRIDGES

▲ **PENNSYLVANIA**—Pa. Hys. Dpt., 506 North Office Bldg., Harrisburg,
Bucks Co.—interchange and approach sys. for existing Burlington Bridge over Delaware River, to connect approaches with 5 hys. on Penna. side. $2,600,000. Erdman Anthony & Hosley, 1835 N. 3 St., Harrisburg, consult. engrs. R. A. Farley, c/o owner, ch. engr.

STREETS AND ROADS

▲ **Ga., Savannah**—Bd. Comrs. Chatham Co. Courthouse, Tybee Toll Road to run from Savannah to Tybee Beach, via President St. extension, $3,000,000. Thomas & Hutton, 20 E. Bay St., consult. engrs.

▲ **PENNSYLVANIA**—Pa. Hys. Dpt., 506 North Office Bldg., Harrisburg,
Monroe Co.—14 mi. 4 lane divided hy. between Stroudsburg By-Pass and point ½ mi. west of Pocono Summit, L.R. 1002 (a section Penn-Can Hy.), $16,000,000. Gannett, Fleming, Corddry & Carpenter, Inc., 600 N. 2nd St., Harrisburg, consult. engrs. R. A. Farley, c/o owner, ch. engr.

▲ **Tex., Dallas**—City, City Hall, voted bonds Dec. 2, street imprvs., paving. $22,000,000. CD 10/21.

EARTHWORK, WATERWAYS

▲ **N. J., Rockaway**—New Jersey Power & Light Co., 105 E. McFarland St., Dover, hydroelectric plant, Jefferson Twp. $14,000,000. Ebasco Services, 2 Rector St., New York, N. Y., consult. engrs.

▲ **Oregon**—Portland General Electric Co., 621 S.W. Alder St., Portland, Round Butte Hydroelectric proj. on Deschustes River, Jefferson Co. $71,000,000. State Hydro Electric Comn. has been asked for a construction permit, Bechtel Corp., 20 Bush St., San Francisco, Calif., consult. engrs. John Bankus, c/o owner, staff engr. CD 8/31/51.

▲ **Washington** — Klickitat Co. Public Utilities Dist., Goldendale, dams on Nine-Foot Creek, Trout Lake and Bucks Creek, plus diversion dams at Gilmer and Husum, White Salmon River, and raising Pacific Power & Light Co. dam at Condit to produce 177,000 kw, $48,645,000. North Pacific Consultants, 220 S.W. Alder St., Portland, Ore., consult. engrs. CD 2/28.

AIRPORTS

▲† **Alaska, Mulgrove Hill**—OPERATIONS—U. S. Eng., Anchorage, AC&W operations bldg. at Mulgrove Hill Air Force Station, $5,000,000 Bids in January.

▲† **Alaska, Shemya**—OPERATIONAL FACILITIES—U. S. Eng., Anchorage, operational facilities at Shemya Air Force Station. $10,000,000.

▲ **Colo., Denver**—City and Denver Co., City and Co. Bldg., exten. runways at Stapleton Airfield. $15,000,000. Kon White, 1567 Marion, consult. engr.

▲ **Ill., Chicago**—RUNWAY—Dpt Purchases, City, City Hall, Zone 2, five 250 to 450 ft., concrete runway extens., 150 ft. wide, Midway Airport, $2,000,000. Bids in Spring. CD 9/28/56.

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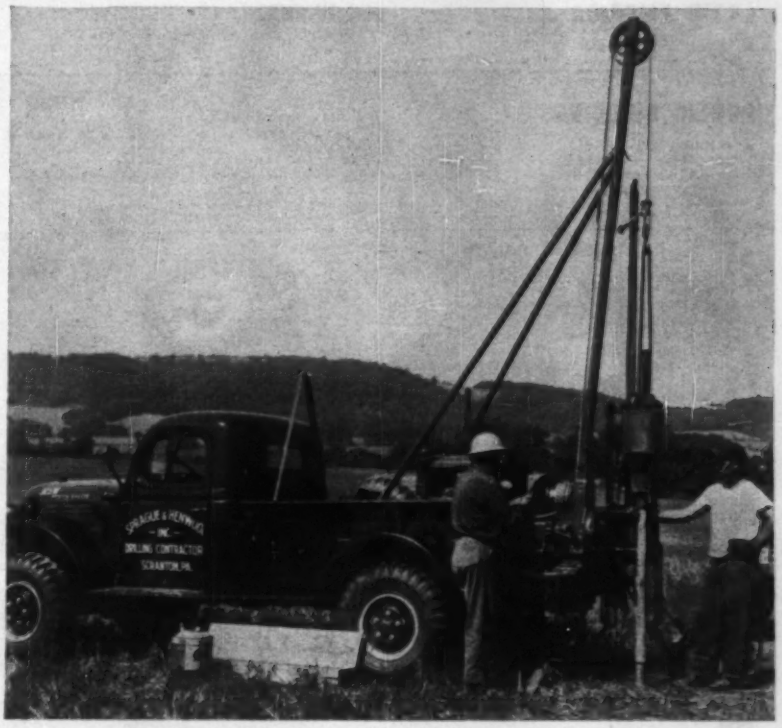

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▲ **Ill., Chicago**—TERMINAL—Dpt. Purchases, City Hall, Zone 2, 3 story, 250 x 700 ft. airport terminal, Park Ridge, **$12,000,000.** Naess & Murphy, 80 E. Jackson Blvd., Zone 4, consult. engrs. R. C. Brownell, City Hall, Zone 2, Ch. Aviation engr., CD 12/3/57.

▲ **Ky., Louisville**—TERMINAL BLDG., etc.—Louisville & Jefferson County Air Bd., Lee Terminal, Standiford Field, plans by Arrasmith & Tyler, 501 Park Ave., Zone 13, 2 story, masonry, rein.-con. Lee Terminal addn., parking ramp, runway paving. **$1,400,000.** Southern Eng. Co., 322 W. Jefferson St., Zone 2, consult. engr. Bids in March. CD 8/1.

LATIN AMERICA

▲ **Mexico, Nuevo Laredo**—CIVIC CENTER—Mex. Fed. Govt., State of Tamaulipas and City of Nuevo Laredo, civic center. **$1,650,000** (USA money).

PUBLIC BUILDINGS

▲† **Alaska, Clear**—DETECTION CENTER, etc.—U. S. Eng., Anchorage, radar computer and tracking bldgs. and power plant, each over **$10,000,000;** surveillance radar scanner bldgs. and passageways, each over **$5,000,000** radar antenna foundations, composite bldg., outside utilities and electronics maintenance shop, each over **$1,000,000;** clearing and grading, **$500,000** all for ICBM detection Center. Bids in January and February.

▲ **Calif., Chino**—INSTITUTION BUILDINGS—State Div. Architecture, 1120 N. St., Sacramento, hospital **$1,679,700;** reception-guidance center addn. **$1,612,-700;** laundry addn. **$555,770;** sewerage **$194,300,** California Institution for Men, State Dpt. Corrections.

▲ **Calif., Chino**—SCHOOL BLDGS.—State Div. Architecture, 1120 N. St., Sacramento, school bldgs. Phase II, Chino Training School, Dpt. Youth Auth. **$5,740,000.**

▲ **Calif., Kingvale**—MAINTENANCE STATION—State Div. Architecture, 1120 N. St., Sacramento, maintenance station, State Div. Hys., State Dpt. Pub. Wks. **$1,750,000.**

▲ **Calif., Long Beach**—COLLEGE BUILDINGS—State Div. Architecture, 1120 N. St., Sacramento, Science Bldg. addn., 3rd unit, **$3,720,000;** Industrial Arts Bldg. **$1,133,000;** cafeteria addn. **$366,400,** Long Beach State College, State Dpt. Educ.

▲ **Calif., Los Padres**—MEDIUM SECURITY PRISON—State Div. Architecture, 1120 N. St., Sacramento, Medium Security Prison, Phase II, California Men's Colony, State Dpt. Correction. **$10,198,000.**

▲ **Calif., Mountain View**—HOSPITAL—El Camino Hospital Dist., 673 Carolina St., Sunnyvale, plans by Stone, Mulloy, Marraccini & Patterson, 619 California St., San Francisco, 4 story, bsmnt. and roughed in 5th floor, steel frame with brick, masonry and glass exterior hospital. **$7,300,000.** Buonaccorsi & Murphy, 350 Mission St., San Francisco, consult. engrs. Bids Dec. 1959. CD 3/19.

▲ **Calif., Sacramento**—HEADQUARTERS OFFICE—State Div. Architecture, 1120 N. St., Sacramento, headquarters office addn. for State Dpt. of Motor Vehicles. **$14,620,000.**

▲ **Calif., Sacramento**—PUBLIC WORKS—State Div. Architecture, 1120 N. St., public works bldg. alterations, addns., State Dpt. Pub. Wks. **$3,450,000.**

▲ **Calif., Sacramento**—STATE OFFICE—State Div. Architecture, 1120 N. St., state office bldg. for state employees retirement sys., State Dpt. Finance. **$12,789,900.**

▲ **Calif., San Diego**—COLLEGE BUILDINGS—State Div. Architecture 1120 N. St., Sacramento, Engineering and Applied Science Bldg. addn. **$2,592,500;** Men's Physical Educ. Bldg. and swimming pool **$2,634,-500,** CD 12/14/56; education bldg. addn. **$820,500;** CD 1/14/55; site development **$132,395,** San Diego State College, State Dpt. Education.

▲ **Calif., San Francisco**—OFFICE—State Div. Architec-1120 N. St., Sacramento, state office bldg., Dpt. Finance. **$4,093,000.** CD 10/19/56.

▲ **Calif., San Jose**—COLLEGE BUILDINGS—State Div. Architecture, 1120 N. St., Sacramento engineering bldg. **$7,093,000;** library addn. **$2,174,000;** music bldg. addn. **$720,240;** speech-drama bldg. addn. **$617,800;** remodel industrial arts area for corporation yard **$229,000;** aeronautics bldg. **$918,000,** CD 4/26/43; site clearance **$110,000,** at San Jose State College, State Dpt. Educ.

▲ **Calif., San Luis Obispo**—COLLEGE BUILDINGS—State Div. Architecture, 1120 N. St., Sacramento, cafeteria **$1,700,900.** graphic arts bldg. **$1,415,000;** Little Theatre, Music Bldg., **$1,697,000,** for California State Polytechnic College, San Luis Obispo Campus, State Dpt. Education.

▲ **Calif., Santa Maria**—SCHOOL—Santa Maria Junior College Dist., voted bonds Nov. 25, schools. **$2,000,000.** CD 9/16.

▲ **Calif., Ventura**—INSTITUTION—State Div. Architecture, 1120 N. St., Sacramento, institution, Ventura School for Girls, Dpt. Youth Auth. **$6,082,000.** CD 10/11/43.

▲ **Calif., Whitmore**—MAINTENANCE STATION—State Div. Architecture, 1120 N. St., Sacramento, maintenance station, State Div. Hys., State Dpt. Pub. Wks. **$1,500,000.**

▲ **Colo., Denver**—NUCLEAR POWER—Dpt. Air Force, Wash., D. C., nuclear power project for aircraft engines at Rocky Mountain Arsenal for research and development of nuclear propulsion units for aircraft and missiles. **$22,500,000** (no appropriation).

▲ **Colo., Littleton**—HOSPITAL—Bd. Trustee, Arapahoe Co., 100 bed county hospital, west of Broadway and north of Ridge St. **$2,000,000.**

▲ **Conn., New London**—HOUSING—Dist. P. Wks. Office, Third Naval Dist., 90 Church St., plans by Kane & Fairchild, 734 Asylum Ave., Hartford, 200 unit brick, wood 1,000 to 1,600 sq. ft. per bldg., Capehart Housing for U. S. Naval Sub. Base Personnel. **$7,750,-000.** Jacob Koton Assocs., 919 Albany Ave., Hartford, consult. engrs. Loomis & Sullivan, 641 Farmington Ave., Hartford, assoc. engrs. CD 10/3.

▲ **Conn., South Norwalk**—SCHOOL—Town of Norwalk, Bd. Educ., 125 East Ave., East Norwalk, Junior High School. **$1,600,000.**

▲ **Ill., Peoria**—COURT HOUSE, etc.—Peoria Co. Bldg. Comn., County Court House, plans by Lankton, Ziegele, Terry & Assocs., 1100 Main St., court house-office, Main and Jefferson Sts. **$4,000,000.**

▲ **Mich., Livonia**—CIVIC CENTER, etc.—City, City Hall, defeated bonds Nov. 4, civic center, incl. city hall addn., library, police and fire headquarters bldg., community center. **$3,285,000.** CD 9/4.

▲ **Minn., St. Cloud**—SCHOOL—Bd. Educ., voted $1,975,000 bonds Nov. 25, Junior High School. **$1,600,000.** Constr. early 1959. CD 10/29.

▲† **Mo., St. Louis County**—REVCORDS CENTER—General Services Admin., P. Bldgs. Service, 10 and F Sts. N.W., Wash. 25, D. C. plans Sverdrup & Parcel Eng. Co., archts.-engrs., 1134 Locust St., St. Louis 1, Mo., 1½ story, 488,500 sq. ft. air-conditioned federal records center. **$7,085,000.** CD 9/10.

▲ **N. J., Lodi**—SCHOOL—Bd. Educ. Twp. of Lodi, plans by John J. Baldino, County Bank & Trust Bldg., Passaic, Senior High School. **$2,000,000.**

▲ **N. J., Toms River**—SCHOOL—Bd. Educ. Twp. of Dover, defeated bonds Nov. 25, high school, **$2,740,-000;** voted bonds Nov. 25, 12-room addn. to Pine Beach Elementary School, **$370,000** and 12-room addn. to North Dover Elementary School, **$370,000,** Micklewright & Mountford, E. Stuyvesant St., Trenton, N. J., archts. CD 11/14.

▲ **N. Y., Jamestown**—COUNTY HOME, etc.—Bd. Supevrs. Chautauqua Co., Court House, county home and infirmary. **$1,800,000.**

▲ **N. C., Charlotte**—OFFICE—Mecklenberg Co. Courthouse, voted **$2,000,000** bonds Nov. 4, county office bldg. **$2,500,000.** Charles Wheatley, Chatham Bldg., Charlotte, archt. CD 10/9.

▲ **O., Garfield Heights**—SCHOOL—Bd. Educ., 4900 Turney Rd., bond election Mar. 10, school addns. **$2,035,000.** Geo. S. Voinovich, 1922 E. 107 St., Cleveland, Zone 6, archt.

▲ **O., Lancaster**—SCHOOL—Lancaster School Dist. bond election May 5, 1959, school bldg. constr. **$4,-190,000.** CD 5/10/54.

▲ **O., Mt. Healthy**—SCHOOL—Mt. Healthy School Dist., Compton Rd., plans by Howard & Thos. McClorey, 3002 Woodburn St., Cincinnati, elementary school, high school, **$1,510,000.** CD 11/10.

(Continued on page 76)

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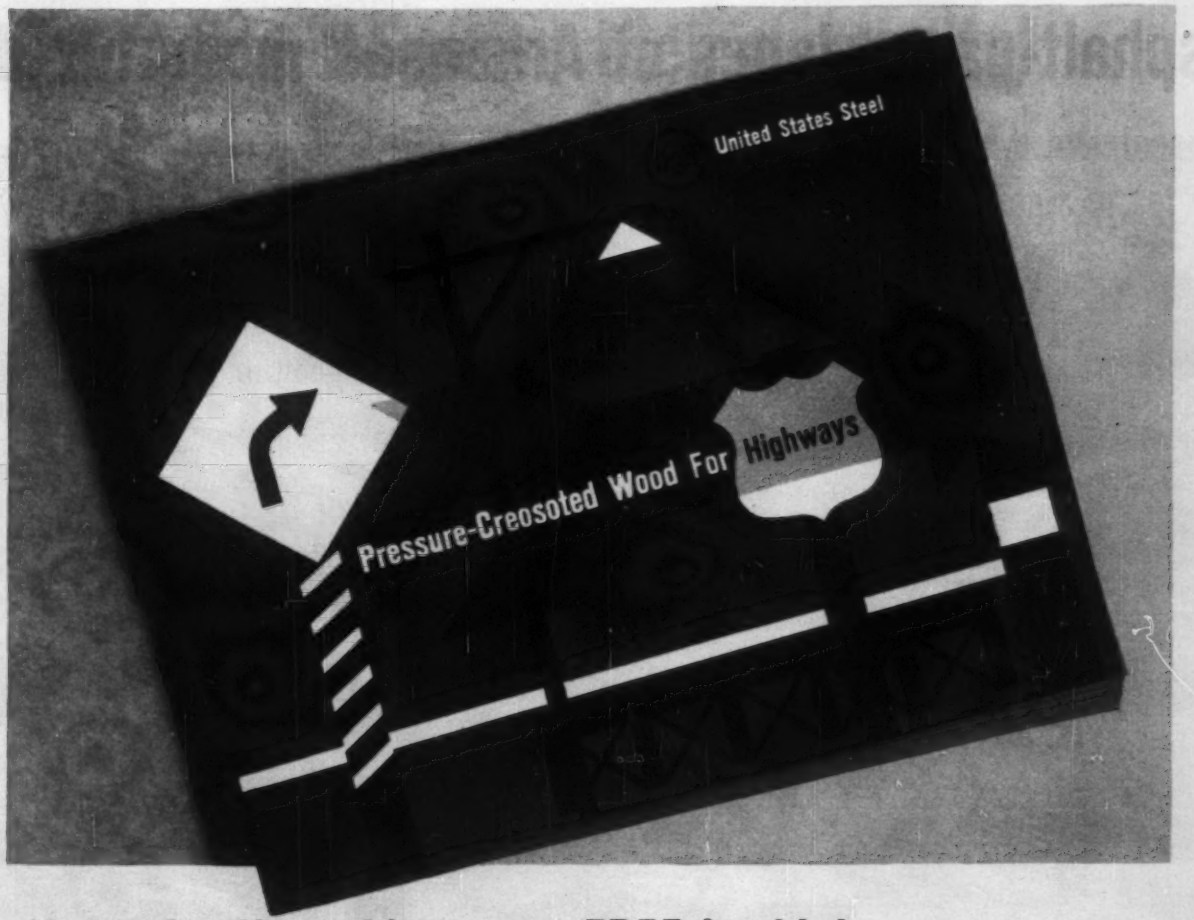

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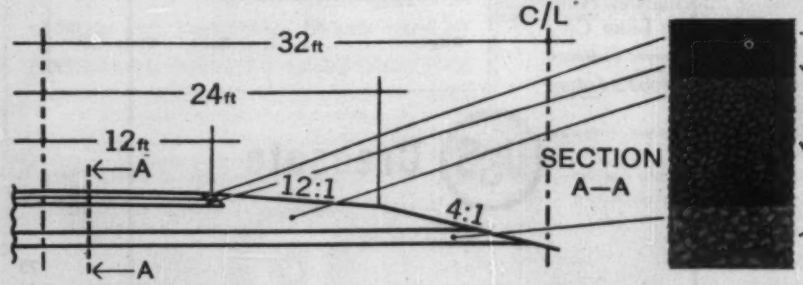
Profile of Van Buren to Alma Asphalt Pavement Design



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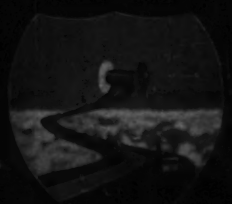

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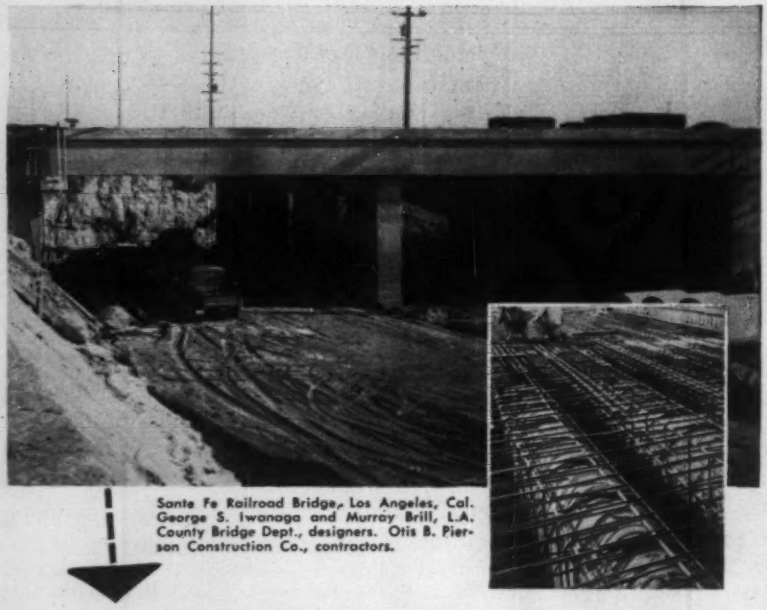

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(Continued from page 72)

▲ **Pa., Middletown**—SCHOOL—Middletown Jt. School Sys., Junior-Senior High School, Lower Swatara Twp. Dauphin Co., $1,800,000.

▲† **Pa., Pittsburgh**—FEDERAL OFFICE—General Services Admin., F St. between 18th and 19th Sts. N.W., Wash. 25, D. C., constr. Federal Office Bldg. south side of Liberty Ave., in block bounded by Grant St. and William Penn Way, $26,138,000.

▲† **Tenn., Oak Ridge**—RELATIVISTIC ISOCHRONOUS CYCLOTRON—Atomic Energy Comn., 1901 Constitution Ave., N.W., Wash., 25, D. C., Oak Ridge Relativistic Isochronous Cyclotron in 2 story, 150x190 ft. bldg., Bethel Valley Rd. $3,000,000. Union Carbide Corp., 30 E. 42nd St., New York, N. Y., operator, will design cyclotron and equipment. Catalytic Constr. Co., 1528 Walnut St., Phila., Pa., engineer on cyclotron facility. CD 9/12.

▲ **Tex., Austin**—ARCHIVES—State Bd. Control, Main Admin. Bldg., plans by Adams & Adams, 500 W. Hutcins Pl., San Antonio, prime archts., archives. $2,500,000. Zumwalt & Vinther, Merc. Sec. Bldg., Dallas, and Reynolds & Morgan, Insurance Bldg., San Antonio, consult. engrs. CD 8/8.

▲ **Tex., Wichita Falls**—SCHOOLS—Wichita Falls Ind. School Dist., 1105 Holiday, voted bonds Nov. 25, Junior High School, Holland Area, $1,000,000; Junior High School, Washington area, $1,000,000; Elementary School, southwest section $500,000; Senior High School, southwest section $1,250,000; combination Junior-Senior High School, North Wichita Falls $1,500,000. CD 10/1/54.

▲ **Wash., Pullman**—COLLEGE ADDNS.—Washington State College, power plant addn., $300,000, W. O. Stevens & Co., 7837 S.E. 30 St., Mercer Island, consult. engrs., plans by Harmon, Pray & Detrick, 2000 5 Ave., Seattle, Zone 1, chemistry addn., $1,451,675; plans by Decker, Christenson & Kitchin, 1411 4 Ave. Bldg., Seattle, Zone 4, biological science bldg., $1,318,205; plans by Culler, Gale, Martelf & Norril, Realty Bldg., Spokane, technology bldg., $1,786,779, CD 11/13.

▲ **Wash., Seattle**—SCHOOL—Highline Public Schools Dist. 401, 253 S. 152 St., plans by Waldron & Dietz, 1411 4 Ave. Bldg., Zone 1, Junior High School in northeast part of dist., $1,507,715; plans by Bassetti & Morse, Tower Bldg., Zone 1, elementary school at South Angle Lake, $500,000, CD 9/22.

▲ **Wash., Seattle**—SUBSTATION—Seattle City Light, City Light Bldg., Zone 4, 250,000 kva. substation, Tukwila, $4,000,000, P. J. Raver, city light supt. Work to start in 1960.

▲ **Wash., Seattle**—SCHOOL—Shoreline Public Schools, E. 158 St. and 20 Ave. N.E., Zone 55, defeated $350,000 bonds Nov. 4, high school, $2,344,978. CD 9/25.

COMMERCIAL BUILDINGS

▲ **Calif., Galt**—SEMINARY—Roman Catholic Church, c/o Bishop of Sacramento, 1115 K St., Sacramento, plans by Harry J. Devine, 1012 J St., Sacramento, Catholic Seminary, 100 acre site at jct. of Twin Cities and Midway Rds., near here. $2,500,000. CD 5/28.

▲ **Calif., Long Beach**—HOSPITAL—J. Dee Gardner Investment Co., 117 E. 8th St., plans by Kenneth S. Wing, 30 Linden Ave., 8 story, 2 bsmnt., 234-bed hospital bldg. adjacent to professional bldg. $4,500,000.

▲ **Calif., Millbrae**—APARTMENT—Joseph Vestuto & Lorne Christopherson, Developers, 2016 Idaho Court, Redwood City, 136 unit, Unit Garden apartment development 8 unit bldg. near Bayside Manor. $1,500,000. Constr. 1959.

▲ **Colo., Grand Junction**—HOSPITAL—St. Mary's Hospital, 7 and Patterson Rd. Plans by John K. Monroe, Security Life Bldg., Denver, 60 bed hospital addn. $1,000,000 (Correction—location of project). CD 11/26, under Colo., Denver.

▲ **D. C., Wash.**—HEADQUARTERS—American Trucking Assns., Inc., 1424 16 St. N. W., headquarters between 16 and 17 St. on P St. N. W. $2,000,000. Chatelain, Gauger & Nolan, 1632 K St. N. W., consult. engrs.

▲ **Ill., Chicago**—HOTEL—Sheraton Corp. of America, 470 Atlantic Ave., Boston, Mass., 25 story, 3 bsmnt., garage, Sheraton Hotel addn., 505 N. Michigan Ave. $14,000,000. CD 6/30/53.

▲ **Ind., Indianapolis**—APARTMENT—Owners, c/o William Lemond, Consolidated Bldg., two 10 story apartments, Cold Springs, Rd., between 41 and 42 Sts., to be cooperatively owned, $2,000,000. Work to start Spring 1959.

▲ **Md., Riverdale**—OFFICE—W. M. Kiplinger, 1729 H St. N. W., Wash., D. C., plans by Chatelain, Gauger & Nolan, 1632 K St. N. W., Wash., D. C., office bldg. on south side of East-West Highway, opposite Prince Georg's Plaza Shopping Center. $1,500,000.

▲ **N. J., East Orange**—APARTMENT—Fred Eckes, Senior Houses Corp., 762 Prospect St., Glen Rock, 17 story, 150 unit apartment for elderly at South Munn Ave. $2,000,000.

▲ **N. J., Ringwood**—CLASSROOM, etc.—Bd. Trustees Shelton College, Skyline Campus, plans by C. J. Kordys, Hamburg Turnpike, Pompton Lakes, classroom bldg., gymnasium and 200-student dormitory. $2,000,000.

▲ **N. J., Woodbridge**—APARTMENTS—Donald Aronow, 647 Mountain Dr., South Orange, 199 luxury apartments, Varady's Grove section. $1,500,000.

▲ **N. Y., Ithaca**—RESEARCH LIBRARY—Cornell University, Ithaca, plans by Warner Burns Toan Lunde, 414 Madison Ave., New York, research library.

$4,750,000. Ammann & Whitney, 111 8th Ave., New York, engrs.

▲ **Okla., Tulsa**—LIBRARY-SCIENCE, etc.—Benedictine Heights College, 2120 E. 21 St., library-science bldg., $1,500,000; girls dormitory, $1,100,000.

▲ **Tex., Dallas**—MEDICAL CENTER—Hal Anderson, 5335 Meaders Lane, or c/o archt., plans by Jacob Anderson, Thomas, Bldg., 7 story masonry fireproof medical center to be called "Medical Tower", air conditioned, Junius and Washington Sts. $2,000,000.

▲ **Tex., San Antonio** — HOSPITAL — Southwest Texas Methodist Hospital Bldg., 315 Sutton St., plans by Phelps & DeWees & Simmons, archts., 342 W. Woodlawn Ave., and Page, Southerland & Page, assoc. archts,. 602 W. Ave., Austin, 150 bed hospital, Unit 1, $3,000,000; Hospital Unit No. 2, $2,000,000; Hospital Unit No. 3, $2,500,000 Hospital Unit No. 4, $2,250,000, north of Oak Hills. CD 7/30/56.

▲ **Wash., Renton**—HOUSES—H. A. Baker & Assocs., 8716 Sand Point Way, Seattle, 1000 houses in Green Hills, 116 Ave. S.E. and S.E. 160 St. on Benson Hill in Spring Glen District, $10,000,000. Work to start 1959.

▲ **Newfoundland, Grand Falls**—HOSPITAL—Bd. Governors, Hospital, Grand Falls, hospital. $2,000,000.

▲ **Que., Montreal**—HOME—LeFoyer de Charite, 3500 32nd Ave., Pointe aux Trembles, plans by Jean Marie Lafleur, 19 rue du Marche, Valleyfield, 4 story, bsmnt., 120 x 360 ft. Old People's Home, incl. 60 x 124 ft. in rear, brick stone, rein.-con. Point aux Trembles. $3,400,000. Lalonde & Monti & Assocs., 3810 Belmont St., consult. engrs.

▲ **Que., Ste. Therese de Blainville**—COLLEGE—College de Ste. Therese de Blainville, Ste. Therese de Blainville, plans by Robillard, Jette et Beaudoin, 10310 Cartier St., Montreal, 3 college wings, $1,500,000. Beaulieu & Trudeau & Assocs., 6650 Darlington Ave., Montreal, consult. engrs.

▲ **Que., St. Jerome**—APARTMENT—Roger Lafleur, 4450 Cote des Neiges Rd., Montreal, plans by Angers & Gelinas, 4450 Cote des Neiges Rd., 3 story, 198 suite, wood, stone apartment block, west of Laviolette St. $2,000,000.

▲ **Que., Three Rivers**—HOUSING—Marcel LaFlamme, Ameau Bldg., housing development, Banlieue, Terrace Duvernay, near here, $2,000,000. J. Urbain Moreau, 1200 Royal St., consult. engr.

INDUSTRIAL BUILDINGS

▲ **N. J., Carteret**—PLANT—Continental Can Co., Fibre Drum Div., 100 E. 42 St., New York, N. Y., plans by Walter Kidde, Inc., 140 Cedar St., New York, N. Y., 225,000 sq. ft. plant, Blair Rd. and Turnpike, $5,000,000.

▲ **O., Columbus**—RESEARCH CENTER—American Brake Shoe Co., Denison Engineering Div., 1160 Dublin Rd. 2 story, 30,000 sq. ft. Hydrodynamiss Research Center. $1,500,000.

▲ **O., Fairfax**—INDUSTRIAL—Espy-Straus, Inc., 519 Main St. and Modern Real Estate Sales, 8015 Plainfield Rd., Cincinnati, 50 acre industrial development for light and heavy industry on Murray Ave. $12,000,000. Larson, McKinney & Assocs., 830 Main St., Cincinnati, consult. engrs.

▲ **S. C., Conway**—PLANT—South Carolina Public Service Auth., Pinopolis, steam electric generating plant, $36,000,000. Chas. T. Main, 80 Federal St., Boston, Mass., consult. engr. CD 10/23/53, under S. C., Moncks Corner.

▲ **Tenn., Nashville**—PLANT—Gates Rubber Co., 999 S. Broadway, Denver, Colo, rubber tire plant, $10,000,000.

▲ **Tex., Houston**—PLANT—Armour & Co., Union Stock Yards, Chicago, Ill., plans by Hedrick & Stanley, archts.-consult. engrs., 5201 Fannin St., meat packing plant, $2,000,000. Bids Spring 1959. CD 3/1/57.

▲ **Ont., Port Arthur**—ELEVATOR—Manitoba Pool Elevators, Wheat Pool Bldg., Winnipeg, Man., 2,500,000 bu. storage grain elevator extension. $2,000,000. C. D. Howe Co. Ltd., Public Building, consult. engrs.

▲ **Que., Contrecoeur**—MILL—The Steel Co. of Canada Ltd., Wilcox St., Hamilton, steel pipe mill, south shore of St. Lawrence River, 25 mi. east of Montreal, $10,000,000.

▲ **Que., Montreal**—PLANT—Avon Cosmetics, Dominion Sq. Bldg., Subsidiary of Avon Products, Inc., 30 Rockefeller Plaza, New York, N. Y. Plans by Luke, Little & Thibaudeau, 1515 Crescent St., cosmetics manufacturing plant, Point Claire Industrial Park Inc. Development, $4,000,000. CD 6/5.

▲ **Que., Montreal**—PLANT—Miron Freres Ltee, 2201 Cote St. Michel Rd., 8,000,000 bag per year cement plant, east of Papineau Ave., Town of St. Michel, $12,000,000.

UNCLASSIFIED

▲ **Alabama**—GAS LINE—Marshall Co. Gas Dist., Scottsboro, natural gas line from Guntersville to Scottsboro along Hy. 79, $1,800,000.

▲ **R. I., North Kingston**—GOLF CLUB, etc.—King Philip Country Club, Inc., Quidnesset Farm, plans by Geoffrey S. Cornish, South East St., South Amherst, Mass. golf club, club house, 18 hole course, 200 boat marina, 1 family cottages and 2 swimming pools, $3,000,000.

▲ **Tex., Dallas**—PARKS—City, City Hall, voted bonds Dec. 2, municipal parks. $2,900,000. CD 10/21.

▲ **Wash., Renton** — RECEIVING SUBSTATION — Puget Sound Power & Light Co., Bellevue, 250,000 kva. receiving substation, $3,750,000. Work to start in 1960.

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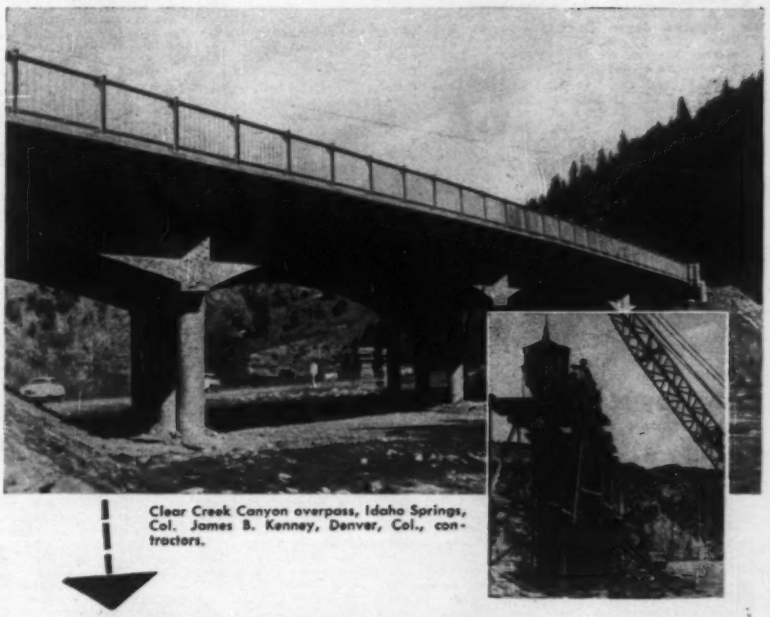

Clear Creek Canyon overpass, Idaho Springs, Col. James B. Kenney, Denver, Col., contractors.

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
January 5 Connecticut
STREETS AND ROADS
January 5 Connecticut

HEAVY CONSTRUCTION—LB & CA

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Bids opened 12/9,

M. **DeMatteo Constr. Co.**, 200 Hancock St., Quincy, Mass., LB $3,390,983, est. $4,120,187, constr. section Interstate Hy. Rte. 93, 1-93-1 (13) 5, Stoneham-Winchester-Woburn. CD 11/18.

▲ **E & F Constr. Co.**, 94 Wells St., Bridgeport, Conn., LB $2,353,840 (12 bidders) North End HIGH SCHOOL, STRATFORD, CONN. Town, School Bldg. Comm., Town Hall, Stratford, Conn. Bids Dec. 4. CD 10/29.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
December 23 Maryland December 30 New Jersey
December 30 Pennsylvania

BUILDINGS—BA

▲ **Pa., Easton**—SCHOOL—BA 1/6—Easton Area Jt. School Sys., Monroe and Reeder Sts., high school. $3,700,000. Plans deposit $125. Hugh Moore, Jr., 73 N. 2nd St., Easton, and Buchart Assoc., 611 W. Market St., York, archts. CD 2/4.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany,

N. Y.—**L. G. DeFelice & Son, Inc.**, North Haven, Conn. LB $2,122,274.85, est. $2,861,000 (10 bidders), c. conc. 2.06 mi., 1.81 mi. access road, 3 hy. separations incl. 231 ft, 191 ft and 205.3 ft. I-beams, City of Schenectady, crosstown connection, Interstate Rte. connection 550, Schenectady crosstown to Thruway New York State Thruway, Mohawk Section. Interchange No. 25 connection Rte. 890, Proj. U-I-IG-323(13), Albany and Schenectady Counties.

N. Y.—**D. W. Winkelman Co, Inc.**, 205 Harrison St., Syracuse, New York. LB $3,784,169.90, est. $4,776,000 (9 bidders), c. conc. pavement variable width 6.37 mi., misc. work incl. 2 highway separations 228.3 ft. and 230.8 ft. prestressed concrete beams, 24 ft. rein.-con. bridge, 211.5 ft. prestressed concrete beam, 24.6 ft rein.-con. bridge slab, Rte. 49, Mohawk River-Rome, S. H. 560, Mohawk River Road-Floyd, S. H. 295, Mohawk River Road-Marcy, S. H. 296, Proj. U-518(6) and F-518(6), Oneida Co.

N. Y.—The following project was withdrawn from the letting. Est. $2,412,000, c. conc. 0.23 mi. misc. work incl. 728 ft. compressed welded plate girder bridge, Interstate Rte. 502. (Glens Falls By-Pass-Hudson River Bridges) and approaches. Proj. 1-1119 24, Saratoga and Warren Counties.

N. Y.—**Bero Const. Corp.**, P. O. Box 70, West River Rd., Waterloo, N. Y. LB $2,024,296.05, est. $2,350,000 (4 bidders), c. conc. pavement misc. work 2.23 mi, incl. pedestrian overpass thru 417.7 ft. girder, 211.8 ft. railroad separation deck girder Rtes. 5 and 20, City of Geneva, Lake Front Arterial, Pt. 2, Geneva Lake Front East Hy. connection, Proj. U-UG-452(7), Seneca and Ontario Counties.

N. Y.—**Slattery Contg. Co. Inc. & Slattery Tunnel Corp.**, 46-36 54th St., Maspeth 78, N. Y. LB $8,480,192.50, est. $12,145,000 (8 bidders), c. conc. pavement variable in width, 1.58 mi., grading and drainage 0.74 mi., misc. work, incl. 309.3 ft. overpass WF beams, 9 hy. separations, WF beams 177.3 ft., 107.2 ft, 142 ft, 127.9 ft, 145.8 ft., 167.2 ft., 82.3 ft., 125.2 ft. and 203.6 ft. Interstate Rte. connection 514 Horace Harding Expressway Section II (19th St. to Oceanai St.) Interstate Rte. Connection 513 Clearview Expressway (73d Ave. to 56th Ave.) Proj. I-862(16) and I-1112(9), Queens Co. CD 11/12.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany, bids opened 12/11,

N. Y.—**The Whiting Turner Contg. Co.**, 6229 Charles St., Baltimore 12, Md. LB $118,613.00, est. $145,000 (9 bidders), repairing, replacing deck, painting 3 spans 293.7 ft. truss bridge, Rte. 5, Caledonia-Avon, S. H. 5273, Br. No. 5, RC-58-171, Livingston Co.

N. Y.—The following project was withdrawn from the letting. Est. $2,412,000, 728 ft. compressed welded plate girder bridge, Interstate Rte. 502 (Glens Falls-By-Pass Hudson River Bridge) and approaches 0.23 mi. Rte. 87. Proj. 1-1119 (24), Saratoga and Warren Counties.

N. Y.—**John Arborio, Inc.**, West Cedar St., Poughkeepsie, N. Y. LB $183,105.50, est. $209,000 (4 bidders), asphalt concrete hy. separation 0.1 mi. 179 ft. prestressed concrete beams Interstate Rte. connection 530 (City of Kingston) Sawkill Rd. hy. grade separation Rte. 587. Proj. I-1150(3), Ulster Co. CD 11/12.

▲ **PENNSYLVANIA**—Pa. Hys. Dpt., 506 North Office Bldg., Harrisburg, bids opened 12/5,

Pa.—**J. Robert Bazley, Inc.**, P.O. Box 298, Pottsville, Pa. LB $5,176,771 (15 bidders) 39,898 ft. divided hy. c. conc. 24 ft. wide, each side variable earth median strip; 5 bridges. T.R. 522-126. Bethel and Union Twps., Fulton Co.;

Pa.—**Harry E. Erb, Inc.**, 440 E. Church Rd., Bridgeport, Pa. LB $265,012 (12 bidders) 2,204 ft. divided hy. of plain c. conc. base with bit. surf variable in width, each side concrete divisor. L.R. 67047 (4) Aramingo Ave., Phila., Phila. Co. CD 11/18.

▲ **PENNSYLVANIA**—Pa. Hy. & Bridge Auth., 506 North Office Bldg., Harrisburg. Bids opened 12/5,

Lycoming Constr. Co., 127 Susquehanna St., Williamsport, Pa. LB $3,314,240, est. $3,800,000 (11 bidders) 13,749 ft. divided hy. c. conc. 24 ft. wide, each side, 60 ft. earth divisor, 11 bridges, (Proj. 821-3) FAI, section Penn-Can Hy. Great Bend Twp.; Great Bend Boro. Susquehanna Co. CD 11/18.

BUILDINGS—LB & CA

▲ **Gilbane Bldg. Co.**, 90 Calverly St., Providence, R. I., CA $20,000,000, 900 units Penn Towers APARTMENTS, 18th and 19th Sts., PHILA., PA. Penn Towers, Inc., 8601 Germantown Ave., Phila., Pa. CD 6/16, under Sylvester J. Lowery, 18th and Walnut Sts., as owner.

▲ **Rupert Constr. Co.**, 3400 Lancaster Ave., Wilmington, Del., CA $2,474,301, general contract De La Warr HIGH SCHOOL, NEW CASTLE, DEL. Rosehill-Minquadale School Dist., New Castle, Del. E. William Martin, 830 West, Wilmington, Del., archt. Kain & Hooven, 44 S. Lansdowne Ave., Lansdowne, Pa., engrs. Bids Dec. 3. CD 12/5, under LB.

SOUTH

HEAVY CONSTRUCTION—LB & CA

▲† **Five Boro Constr. Corp.**, 2 Lafayette St., New York, N. Y. CA $6,243,000. polaris missile assembly facility, Naval Ammunition Depot, NBY 19955, CHARLESTON, S. C. Dist. P. Wks. Office Bldg. 13 U. S. Naval Base, Charleston, S. C. Bids Dec. 2. CD 12/5, under LB.

▲ **Blount Bros. Constr. Co.**, 79 Commerce, Montgomery, Ala., LB $9,996,689, airport terminal bldg., ATLANTA, GA. City, City Hall, Atlanta, Ga. Bids Dec. 9. CD 11/5.

▲ **KENTUCKY** — Commonwealth of Ky., Dpt. Hys., Frankfort, Bids opened 12/5,

Ky.—**Ralph E. Mills Co.**, 410 Ann St., Frankfort, Ky., LB $4,629,155 (9 bidders) grade, drain, surf. 7.196 mi., incl. 13 structures Louisville-Lexington Int. State 64, I 64-3(5), Franklin Co.;

Ky.—**Ralph Myers Constr. Co.**, P.O. Box 230, Salem, Ind., LB $2,436,312 (9 bidders) grade, drain 4.679 mi. incl. 2 structures Covington-Lexington Interstate 75, I 75-7(3), Grant Co.;

Ky.—**R. B. Tyler Co.**, 1446 Levering St., Louisville 8, Ky., LB $3,280,130 (13 bidders) c. conc. 11.586 mi. Louisville-Tennessee State Line Rd. from end of Elizabethtown Interchange 1.6 mi. south extending southerly to US 31-W 1.6 mi. south of Sonora, I 65-4(6), Hardin Co., CD 11/12;

▲† **Tecon Corp.**, 202 Davis Bldg., Dallas, Tex., CA $16,379,035, locks for Barkley Lock and Dam Project, 3 mi. above mouth of Cumberland River, Lyons and Livingston Counties. CIVENG 40-058-49-3, KENTUCKY and TENNESSEE. U. S. Eng., 306 Federal Office Bldg., Nashville, Tenn. Bids Nov. 20. CD 11/25, under LB.

BUILDINGS—LB & CA

▲ **J. C. Coe Constr. Co.**, Builders Bldg., Charlotte, N. C., CA $4,048,673. PUBLIC SAFETY BLDG., NORFOLK, VA. City, City Hall, Norfolk, Va. Bids Sept. 25, CD 10/2, under LB.

▲† **H. L. Coble Constr. Co.**, 1705 Battleground Ave., Greensboro, N. C., LB $12,888,000, 800 Capehart HOUSING UNITS Marine Corps Base, NBy (CH) 7757, Spec. 7757/57, CAMP LE JEUNE, N. C. Dist. P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk 11, Va. Bids Dec. 9. CD 12/2.

▲ **Cecil's, Inc.**, Schuyler Apartments, Spartanburg, S. C. CA approx. $2,500,000 151-unit APARTMENT, Pharr Court, ATLANTA, GA. Phoenix Investment Co., c/o Del. Webb, S. 23 Ave., Phoenix, Ariz. David W. Cecil-O. Kent Cecil, 180 N. Dean, Spartanburg, S. C., archts. Awarded Dec. 5.

▲ **Louis, Lee & Carlas Allen**, 6913 Homestead Dr., Louisville, Ky., Separate Contracts, $3,500,000, 350 RESIDENCES near LOUISVILLE, KY. Donald L. Thomas, 2629 Merhoff Ave., Louisville, Ky., archt.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲† **Ohio and Kentucky**—BA 1/20—U. S. Eng., 237 4th Ave., Huntington, Zone 18, W. Va., constr. locks, operations bldg. and guard walls for New Richmond Locks and Dam Proj., Ohio River 1.7 mi. below Chilo, O. and approx. ¾ mi. upstream from Cincinnati, right side of Ohio River in Clermont Co., O. and Bracken Co., Ky. CIVENG-46-022-590-42. CD 12/9.

BUILDINGS—BA

▲ **Ill., Chicago**—HOTEL—Bids Asked—Dr. R. S. Levy & Jos. Rosenberg, 38 S. Dearborn St., remodel 13 story Fisk Hotel into 300 room hotel, incl. 5 story garage, Wabash and S. Water St. $3,500,000. Edward Steinborn, 176 W. Adams St., Zone 3, archt. CD 10/8.

HEAVY CONSTRUCTION—LB & CA

▲ **Arcole Midwest Corp.**, 3225 Main St., Skokie, Ill. LB $2,248,978 (9 bidders) Northwest Expressway, dual 36 ft. concrete pavements from east of Canfield to west of Normandy Ave., constr. 8 ramps; LB $2,992,526 (9 bidders) Northwest Expressway dual 36 ft. concrete pavements Canfield Road to Normandy Ave., constr. 9 ramps, CHICAGO, ILL. Comrs. Cook County, County Building, Chicago 2, Ill. Bids Dec. 9. CD 12/2.

Frenzel Bros. Co., 3015 N. California Ave., Chicago, Ill., LB $191,964 (6 bidders) Calumet Expressway imprvs. incl. 10 in. c. conc. interchange ramps, frontage roads, bit. paving, Thornton (Chicago, Ill.).

BUILDINGS—LB & CA

▲ **W. E. Schweitzer & Co.**, 2207 Dodge Ave., Evanston, Ill., LB $4,349,000, 4 story, 170x220 ft., rein.-con., brick HOSPITAL, OAK LAWN, ILL. Evangelical Hospital Assn., 5421 S. Morgan St., Chicago, Ill. Bids Dec. 1. CD 10/27.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
January 6 Oklahoma-Texas
STREETS AND ROADS
December 23 Colorado

BUILDINGS—LB & CA

▲ **Miller Davis**, 1029 Portage St., Kalamazoo, Mich., LB $2,149,000, 200,000 sq. ft. HIGH SCHOOL, West Locust St. and Waverly Rd., DAVENPORT, IOWA, Bd. Educ. Community School Dist., Davenport, Iowa. Bids Nov. 13. CD 11/10.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
January 4, 7 California

▲ **Wash., Seattle**—BA 1/14—City, County-City Bldg., water storage dam on south fork of Tolt River, $7,200,000. Plans deposit $25. R. W. Morse, city engr. (Correction—bid date), CD 12/11.

BUILDINGS—LB & CA

▲ **Chemical Constr. Corp.**, 525 W. 43 St., New York 36, N. Y. CA Total est. $9,000,000. 1st section fertilizer PLANT, FRESNO, CALIF. Valley Nitrogen Producers, Inc., Equitable Bldg., Fulton St., Fresno, Calif. CD 11/3.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
January 7, 21 Ontario

BUILDINGS—LB & CA

▲ **Perini Pacific Ltd.**, 475 Howe St., Vancouver, B. C. LB $3,333,616, 5 story, T-shaped, rein.-con. HOSPITAL, 13th and St. George Sts., NORTH VANCOUVER, B. C. North & West Vancouver Hospital Society, North Vancouver, B. C. Bids Nov. 25. CD 11/19.

▲ **Dominion Bridge Co., Ltd.**, Lachine, Que. and **Dominion Structural Steel Ltd.**, 6894 Clanranald St., Montreal, Que. CA Est. $9,000,000 furnishing, fabricating steel, 1st phase OFFICE, Place Ville Marie, MONTREAL, QUE. Webb & Knapp (Canada) Ltd., 1010 St. Catherine St. W., Montreal, Que. CD 11/29/57.

LATIN AMERICA

BUILDINGS—LB & CA

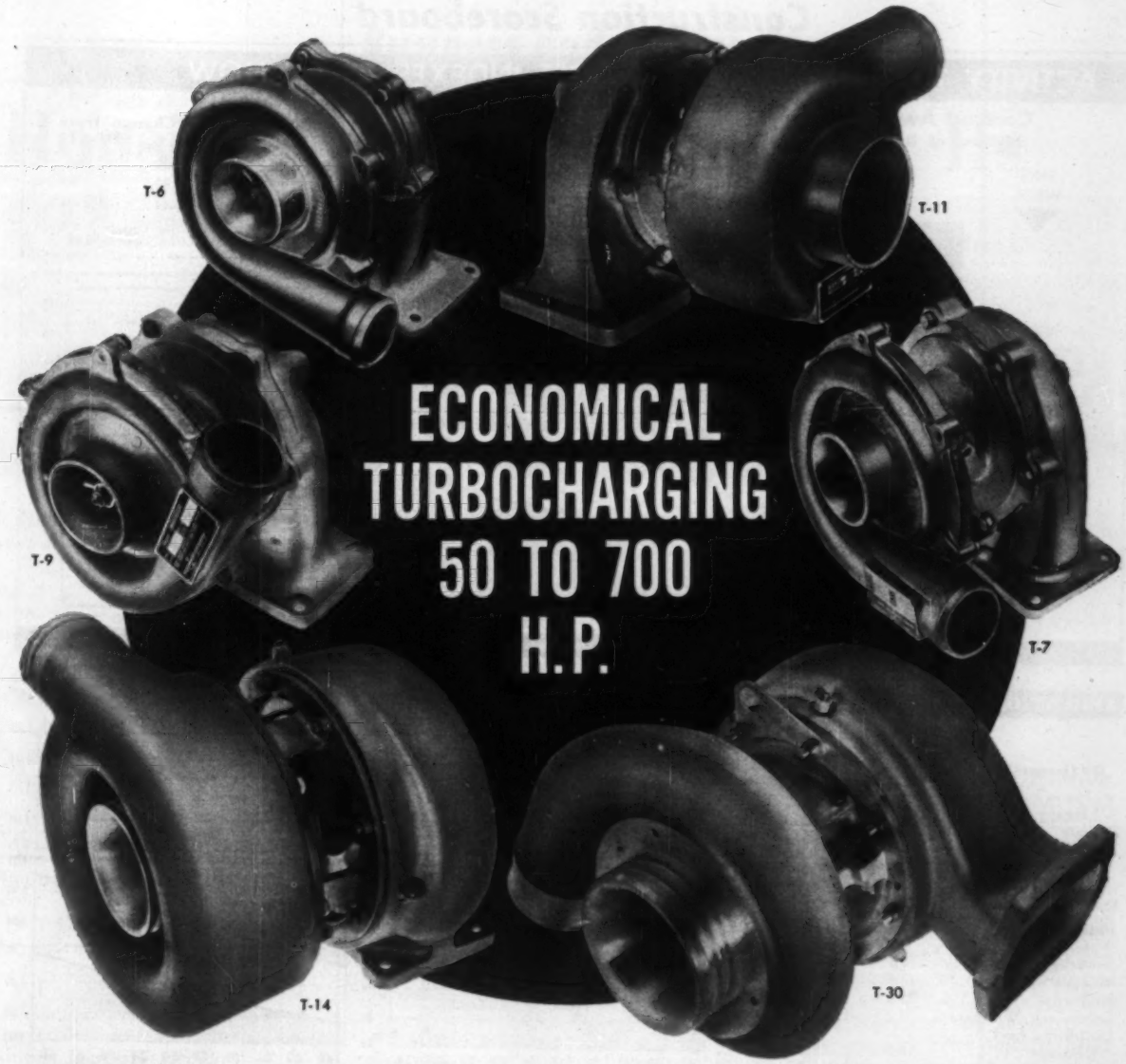
▲ **Henry J. Kaiser Co.**, (Heavy Construction Div.) 1924 B'way., Oakland, Calif., U.S.A., CA $170,000,000, STEEL PLANT, incl. sinter plant, 53 coke ovens, blast furnace, soaking pits, L-D processing plant with two 60-ton furnaces, slab and plate mills, 66 in. hot strip mill continuous pickling line, galvanizing equipment, cold reducing mill, oxygen producing plant, 30,000 kw steam power plant, coal handling facilities, and 25 mi. railroad, PIACAGUERA, BRAZIL. Companhia Siderurgica Paulista, Sao Paulo, Brazil. Kaiser Engineers International Co. and Kaiser Engenhariae Construcoes, Ltda., c/o contractor, consult. engrs.

AMERICANS ABROAD

BUILDINGS—LB & CA

▲ **Stone & Webster Engineer, Ltd.**, London, England, (sub of Stone & Webster Engineering Co., 49 Federal St., Boston, Mass., U. S. A.) CA design and construct PLANT to produce olefins for petroleum chemicals, GRANGEMOUTH, SCOTLAND. British Hydrochemicals Ltd. (British Petroleum Co. Ltd. & Distillers Co. Ltd.), c/o contractor.

(Proposal Advertisements see pp. 88 to 90)



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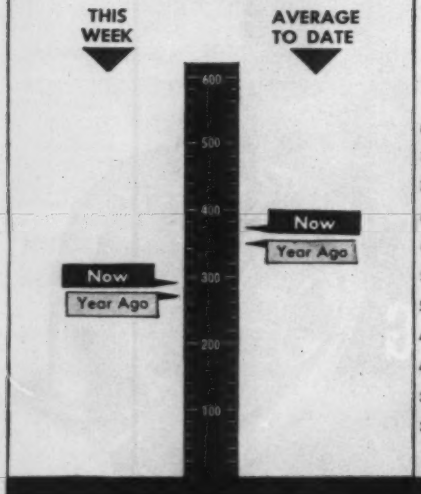
Construction Scoreboard

ACTIVITY THIS WEEK

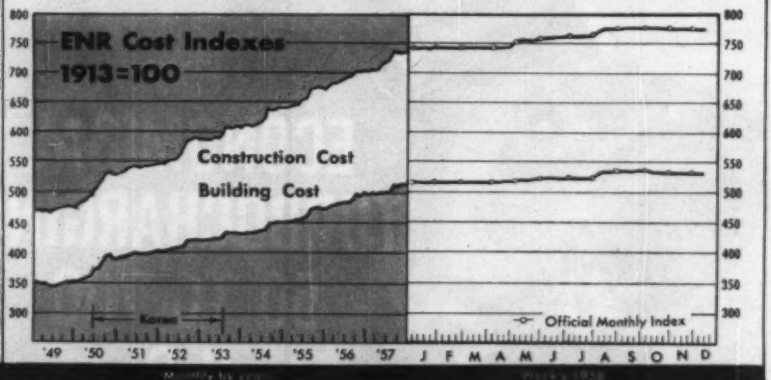
Contract Awards
Millions of Dollars



COST INDEXES AS OF NOW

ENR INDEXES (1913=100), 20-cities average	Week of Dec. 11 1958	% Change from Nov. 6 1958	% Change from Dec. 12 1957
Construction Cost	773.71	−0.47	+4.90
Building Cost	534.69	−0.41	+3.66

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.


ENR Cost Indexes
1913=100
Construction Cost
Building Cost
Korea
Official Monthly Index
'49 '50 '51 '52 '53 '54 '55 '56 '57
J F M A M J J A S O N D

AMOUNT OF CONTRACTS LET

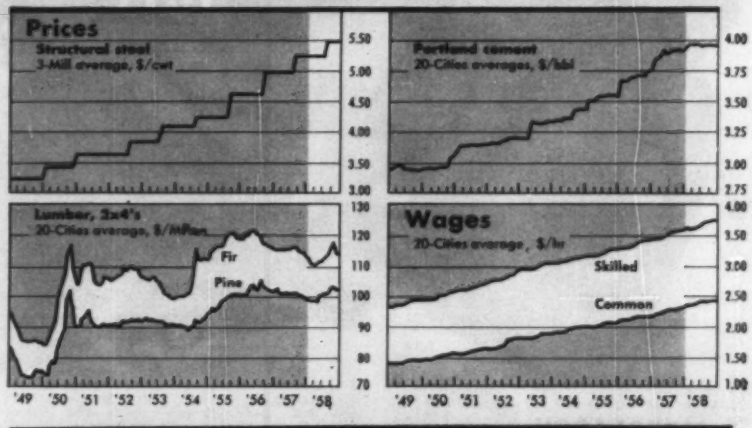
By Ownership	This Week millions	Cum. 51 wks 1958 millions	Chge '57-'58 %
All Heavy Constr.	$291.8	$18,857.0	+6
Private	109.5	7,608.2	−8
Public	182.3	11,248.8	+19
State & Municipal	125.8	8,444.7	+16
Federal	56.5	2,804.1	+29
By Type of Work			
Public			
Waterworks	5.8	302.7	−15
Sewerage	16.1	605.8	+13
Bridges*	13.6	703.1	−9
Highways	32.4	3,633.9	+25
Earthwork, Waterways	38.1	1,040.6	+8
Buildings, Excl. Housing	56.5	2,582.1	+11
Housing	2.4	1,046.0	+68
Unclassified	18.0	1,344.7	+39
Private			
Buildings			
Mass Housing	70.6	3,698.7	+23
Commercial	14.8	1,773.9	+3
Industrial	20.9	1,720.9	−43
Unclassified	2.6	404.0	−19

*Includes private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

NEW CAPITAL FOR CONSTRUCTION

	Week of Dec. 11 millions	Cum. 50 wks 1958 millions	Chge '57-'58 %
Corporate Securities	$ 85.0	$4,994.0	−12
State and Municipal:			
All Except Housing	156.7	6,019.4	+11
Housing	...	118.0	−34
Federal Loans	0.8	192.0	+1
Federal Aid	...	2,596.0	+20
Total Nonfederal	$242.6	13,922.6	+2
Federal Appropriations:			
Projects in U. S.	...	3,946.1	+42
Outside U. S.	...	35.2	+21
Total New Capital	$242.6	$17,903.8	+9



ENR COST INDEXES IN 22 CITIES, 1913 = 100

City	Construction Cost Dec. 1958	Construction Cost Percent Change from last Month	Construction Cost Percent Change from last Year	Building Cost Dec. 1958	Building Cost Percent Change from last Month	Building Cost Percent Change from last Year
Atlanta	584	0	+6.5	472	0	+3.5
Baltimore	709	+0.2	+5.8	542	+0.8	+4.2
Birmingham	622	+0.4	+4.9	495	+0.6	+4.1
Boston	807	+1.3	+5.4	542	+1.1	+3.7
Chicago	859	−0.1	+2.7	561	−0.1	+6.3
Cincinnati	777	−0.1	+3.8	515	−0.2	+2.3
Cleveland	880	0	+2.6	533	0	+1.7
Dallas	573	0	+4.9	469	0	+4.0
Denver	731	0	+2.8	532	+0.4	+2.0
Detroit	892	0	+7.4	574	−0.4	+5.4
Kansas City	768	0	+3.5	533	−0.8	+3.3
Los Angeles	824	−0.5	+5.8	530	0	+3.2
Minneapolis	824	0	+4.5	553	−0.4	+2.9
New Orleans	617	−0.4	+4.5	494	−1.4	+2.7
New York	939	−0.9	+5.7	608	0	+2.9
Philadelphia	790	0	+2.0	569	+0.4	+1.3
Pittsburgh	827	0	+5.0	595	0	+4.8
St. Louis	844	0	+6.0	563	0	+3.1
San Francisco	812	0	+6.7	533	0	+5.3
Seattle	799	0	+7.0	484	0	+5.5
U. S.—20 Cities' avg.	774	0	+4.8	534	0	+3.6
Montreal	603	0	+2.0	449	0	−0.2
Toronto	632	+2.1	+3.8	473	+1.5	+0.5

Housing Outlook: Some Big Ifs

- **Homebuilders think next year's starts will top the 1958 total, but only with lots of help from Congress—including money, easier terms**
- **What's more, the homebuilders say Congress will have to act fast, otherwise the aid won't help much**
- **If Congress moves too slowly, or fails to act, housing starts may fall 20% to 25% below 1958**

Homebuilders will go before Congress next year with a riches-to-rags approach.

They will say 1958 was a good housing year, but the 1959 market will crumble unless the lawmakers act swiftly and favorably.

The technique was given a test run last week. The National Association of Home Builders released the results of its 1959 outlook, based on a poll of 300 members.

There was optimism, but it was qualified by some big "ifs." They add up to the view that housing starts next year will top 1958 only:

- If Congress liberalizes Federal Housing Administration financing terms.
- If Congress gives more money to the Federal National Mortgage Association (Fannie Mae).
- If Congress revitalizes the Veterans Administration home loan program.
- If Congress establishes a separate housing mortgage facility.

To give the statistical results of the survey some bounce, about 40 top builders from all parts of the nation each told government officials what is expected to happen to housing in various regions.

The rapid-fire "ifs" were followed by a punch-line. Congress would have to act on all the items by February at the latest.

If action is delayed until April, starts in 1959 will only equal those of 1958, the builders say. And should action come later than April, they predict starts will drop 20% to 25% below those of 1958.

• Shaping things to come—While the warning notes were sounded on one floor of the NAHB's housing center, programs were being hammered out on another. NAHB's legislative council nailed the final planks in its program and gave it to the executive council.

It will be one of the largest and most inclusive bundles NAHB has yet placed before Congressional committees.

Establishment of a central mortgage bank facility probably will be a major proposition. There is general NAHB agreement that this unit should:

- Be able to buy mortgages.
- Be operated by an independent board.
- Function through stock ownership rights.
- Be able to make interim loans backed by outstanding FHA and VA mortgages.

The plan isn't new. It's basically a souped up version of a similar proposal NAHB made four years ago. It never got off the ground. But according to one association executive, "The idea is a lot livelier now than it ever was before."

• VA must be rescued—The association will make an all-out effort to save the VA home loan program. Individual members constantly and loudly stress the importance of veteran buyers to the housing market. NAHB won't ignore their pleas. The VA housing program is scheduled to die in 1960, but the builders hope to make it a fairly permanent institution before then.

NAHB currently is considering a way to make self-supporting that portion of the over-all veterans' benefits program pertaining to housing. Unlike FHA, which earns its own money to pay its own way, the VA loan program is administered as only one phase of the Veterans Administration. Funds come from the U. S. Treasury and are a direct cost of government.

One idea may be run up to the target pits; levy a small percentage fee on the individuals making use of the home loan program. The amount could be ¼ or ½ of 1% on top of the existing VA mortgage interest rate.

This, in effect, would be similar to the ½ of 1% premium on the FHA-insured loans. The VA levy would pay operational expenses.

The idea may be shot down quickly by some members of Congress, or even by governing members of NAHB. The proposal could be one method of delaying the disappearance of the VA loan program entirely.

• Keep the interest lids—NAHB may be faced with strong opposition from other powerful organizations on at least one point. Lender groups, such as the Mortgage Bankers Association, will drive toward the removal of the ceilings on VA and FHA interest rates.

On this score the lenders have Administration support. But NAHB has some top members of Congress on its side.

Builder arguments are designed to win more support. The industry bases its entire housing forecast on "availability of funds at reasonable prices." Freeing interest rates on government-backed loans is not NAHB's idea of the way to make housing predictions an accomplished fact; even though the interest ceilings are the reason for the large discounts on FHA-VA loans.

"Builders are in favor of adjustable interest rate under a ceiling," says Richard G. Hughes, chairman of the board of trustees of NAHB's housing center. This is not as contradictory as it sounds. FHA loans have a legal maximum ceiling of 6%. Up to this amount FHA is free to raise or lower the rate, as circumstances require. VA loans, on the other hand, are set at an absolute maximum now of 4.75%. Only Congress can raise it. It is these loans that now are unobtainable in a few areas and in most areas command discounts of 6% to 10%.

In practice, the rigid VA ceiling restricts FHA's freedom to raise its allow-

able interest rate from its present 5¼%. A rise in FHA rates would wipe out what is left of the VA lending program, because funds would be diverted in larger quantities to FHA mortgages.

This is the flexibility NAHB would be willing to accept: Give the VA the same administrative power over interest rates as FHA, removing its regulation from Congress entirely.

There is also little doubt that NAHB will gladly accept a gift from Congress in the form of funds for Fannie Mae. The $1 billion handed to the agency this year to buy at par FHA and VA mortgages up to $13,500 each was a builder's bonanza. That emergency provision added 225,000 housing starts to the 1958 market, NAHB says.

Congressional action on this point will depend largely on the nation's economic health next year.

• **No "ifs" on cost**—Although builders are hedging on their forecast of housing starts in 1959, they are positive about cost trends.

Each of the 40 builders present at the session said costs would rise next year by at least 5%. And 99% of the 300 polled by NAHB questionnaire said costs would rise. Labor, land, materials, financing and sales expenses, all are expected to be higher next year.

However, the low-cost house will not disappear from the market. Builders polled placed the median price this year at $14,100. Next year it is expected to drop to $13,900.

This drop underlines builder determination to return in larger numbers to a more basic house. Frills will be cut back further next year. It appears that some builders now consider any structure with more than a bath, kitchen, bedrooms and living room a "frilly" house.

Others say they will be able to provide more living space next year with little increase in selling price by building two-story structures. The return to this style apparently will be a powerful trend next year in many sections of the country.

• **Land development headaches**—Cost of developing land is among the major problems facing builders. They hope FHA will come up with some means of providing help in obtaining, at reasonable rates, funds to pay for roads, storm and sanitary sewers and water systems.

Norman P. Mason, FHA commissioner, says his agency is studying the problem.

"Any such plan must be economically feasible, as well as mechanically feasible," Mr. Mason explains. FHA has not yet hit upon that necessary combination.

Business Spending Plans Are Up

Industry plans to boost spending on new plants and equipment during the first quarter of 1959.

This would be the second consecutive quarterly rise in new investment since the 1958 decline bottomed out in this year's third quarter.

Annual rate of spending in the January-March period of next year is estimated at $30.5 billion, according to a joint report of the Department of Commerce and the Securities and Exchange Commission. This is $580 million higher than the estimate for the current October-December quarter and represents a 2% increase (see table). t is also $900 million above this year's third quarter rate.

Particularly significant is the upturn in manufacturers' plans for capital spending in the first three months of next year. Their outlays continued to fall through the current quarter.

Another bright spot is that no dip is planned by public utilities in the first quarter of 1959. Annual forecasts for 1959 predicted a moderate cutback.

Although the upturn in manufacturing outlays does not distinguish between expenditures for equipment and those for new construction, the figures usually are a reliable indicator of industrial building trends.

The indicated trend is bolstered by ENR's Backlog of Heavy Construction in the planning stage. They show a rise in industrial construction plans.

In October, proposed industrial building tallied $181 million. And November's total came close to equaling October's figure, falling short by only $325,000. Volume in both months was double the average monthly volume during April through September.

There are two aspects of the reversal in the capital spending slide important to the construction industry.

• The recent rise in proposed industrial building reported by ENR may show up in a contract award rise during the next three months.

• Business' sentiment toward expansion is improving. This could prove to be contagious. If it should, a continued uptrend in plans for new plant could result. This would be followed by a steady upswing in contracts for industrial building.

Plant and Equipment Spending Plans[1]

(SEC-Commerce estimates in billions of dollars)
Seasonally Adjusted at Annual Rates

	1958 Q3 Actual	1958 Q4[2] Est.	1959 Q1[2] Est.	% Change Q3 '58 Q4 '58	% Change Q4 '58 Q1 '59
Total—All Industry	29.61	29.93	30.51	+ 1	+ 2
Manufacturing	10.86	10.79	11.08	− 1	+ 3
Durable-goods industries[3]	5.16	5.11	5.35	− 1	+ 6
Iron and steel	1.20	1.01	1.01	−16	0
Nonferrous metals	.35	.30	.34	−14	+13
Electrical machinery & equipment	.43	.40	.42	− 7	+ 5
Machinery except electrical	.84	.90	.85	+ 7	− 6
Motor vehicles & equipment	.52	.52	.55	0	+ 5
Transportation equipment excl. motor veh.	.35	.32	.37	− 9	+16
Nondurable-goods industries[4]	5.70	5.68	5.71	−0.4	+ 1
Food and beverages	.76	.74	.72	−2.6	− 3
Textile-mill products	.29	.31	.29	+ 7	− 6
Paper and allied products	.59	.52	.48	−12	− 8
Chemicals and allied products	1.27	1.22	1.34	− 4	+10
Petroleum and coal products	2.17	2.30	2.28	+ 6	− 0.9
Mining	.88	.91	.84	+ 3	− 8
Railroads	.63	.59	.54	− 6	− 8
Transportation, other than rail	1.29	1.64	1.72	+27	+ 5
Public utilities	6.10	6.32	6.41	+ 4	+ 1
Commercial and other[5]	9.85	9.68	9.94	− 2	+ 2

[1] Data exclude expenditures of agricultural business and outlays charged to current account.
[2] Estimates based on anticipated expenditures reported by business between late October and early December.
[3] Includes fabricated metal products, lumber products, furniture and fixtures, instruments, ordnance, and miscellaneous manufactures.
[4] Includes apparel and related products, tobacco, leather and leather products, and printing and publishing.
[5] Includes trade, service, finance, and construction.

Good for All

Survey finds tollroad is creating new wealth

Those who back the construction of new highway facilities, both toll and free, argue the roads add to the economic wealth of states and communities.

They create more than just the business obtained through the direct award of construction contracts and repay their cost in indirect benefits.

Indiana's Department of Commerce shows some success in proving the argument. Its new survey shows that the state's two-year-old turnpike is creating more new construction. It is also adding to the economic wealth of the state's localities.

The department reports that within the last three years 112 Indiana towns obtained 354 new industries. Thirty-five of these towns are located within a 45-mile strip straddling the tollroad. These 35 communities obtained 156, or 44%, of the 354 new industries established. Of that total, 11 industries located or expanded since March. Total estimated expenditures for these plants are estimated at $65 million.

These figures do not include construction of the 10 service stations along the 156-mile facility. Six additional service station facilities are under construction and will be opened during 1959. The construction cost of these facilities is $2.1 million.

But the stations and restaurants also boost total income within the state. The restaurants employ 799 persons who are paid $1.1 million annually. The restaurant concession also spends about $680,000 a year with state companies.

The service stations employ 160 persons and have an annual payroll of $734,400. In addition, the companies operating the stations bought approximately $5 million in merchandise from Indiana corporations. The six new service facilities are expected to create 150 new jobs and spend an additional $270,000 within the state.

Raymond International Forms British Subsidiary

Raymond International Inc. (formerly Raymond Concrete Pile Co.) has formed Raymond International (U. K.), Ltd., a wholly-owned subsidiary. Its headquarters are in London.

Many engineering and construction services will be offered.

Alaskan Market Gets Stronger

Alaska's expanding heavy construction market will get off to a fast start next year.

In January and February, Corps of Engineers, Anchorage, will call for bids on seven U. S. Air Force projects estimated to cost $11 million.

An additional $13 million in new Air Force construction is in the planning stage.

Other federal construction will add to the Alaskan construction market. About $19 million of river, harbor and flood control construction authorized by Congress is awaiting fund appropriations, expected next spring.

Largest of these is an $11 million flood control project at Fairbanks, on the Chena and Tanana rivers. Others are:

- $2 million in small boat harbors, at Seldovia, Homer, Ninilchik and Dillingham.
- $1 million for phase 1 of a $4.4 million deep water port project at Anchorage.

ENR figures show that as of November 30, Alaska's Backlog of All Heavy Construction in the planning stage was $266.5 million. This is a 25% jump over the Backlog as of December 31, 1957.

Heavy construction awards in Alaska amounted to $93.4 million in the first 11 months of this year, according to ENR. By the end of the year, the Alaskan contract total may hit $100 million. The 1958 total to date already tops the 12-month volume of $89 million for all of 1957.

Public works, of course, claims the largest amount. It tallies $87.8 million, compared to $5.6 million of private work.

In the public works category, federal contract awards claim $79 million of the $87.8 million total for the 11-month period. The remainder is accounted for by state and municipal contracts totaling $8.8 million.

Largest single private contract total is $1.2 million for housing.

Machinery Orders Climb 7%

Contractors boosted their orders for new construction equipment in October.

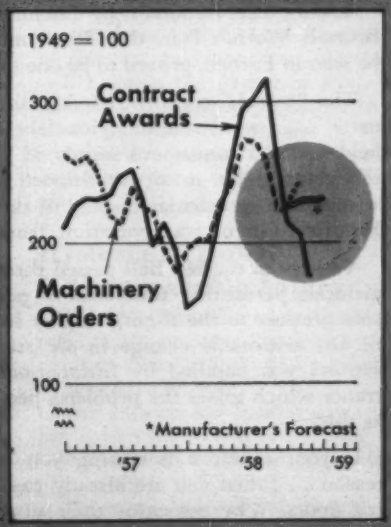
New orders for construction and mining machinery rose 7% above September, according to the McGraw-Hill Department of Economics. (The September value of 226 is an upward revision from the earlier reading of 224).

The value for October is 241, a record for the month. The index is based on 1949 = 100. October's value is 22% above one year ago.

For the first 10 months of 1958, the construction machinery orders index averages 238. This is slightly higher than the 10-month average for 1957 and is topped only by 1956's record of 248.

The two consecutive increases in machinery orders during September and October ran counter to the drop in ENR Heavy Construction Contract Awards. The orders climb reflects the record boom in highway construction, which hit an all-time high in September.

However, the current slump in private and federal construction contracts may soon start to offset the effect of the highway contract boom on equipment orders. Highway contracts have also turned down seasonally since the middle of October.



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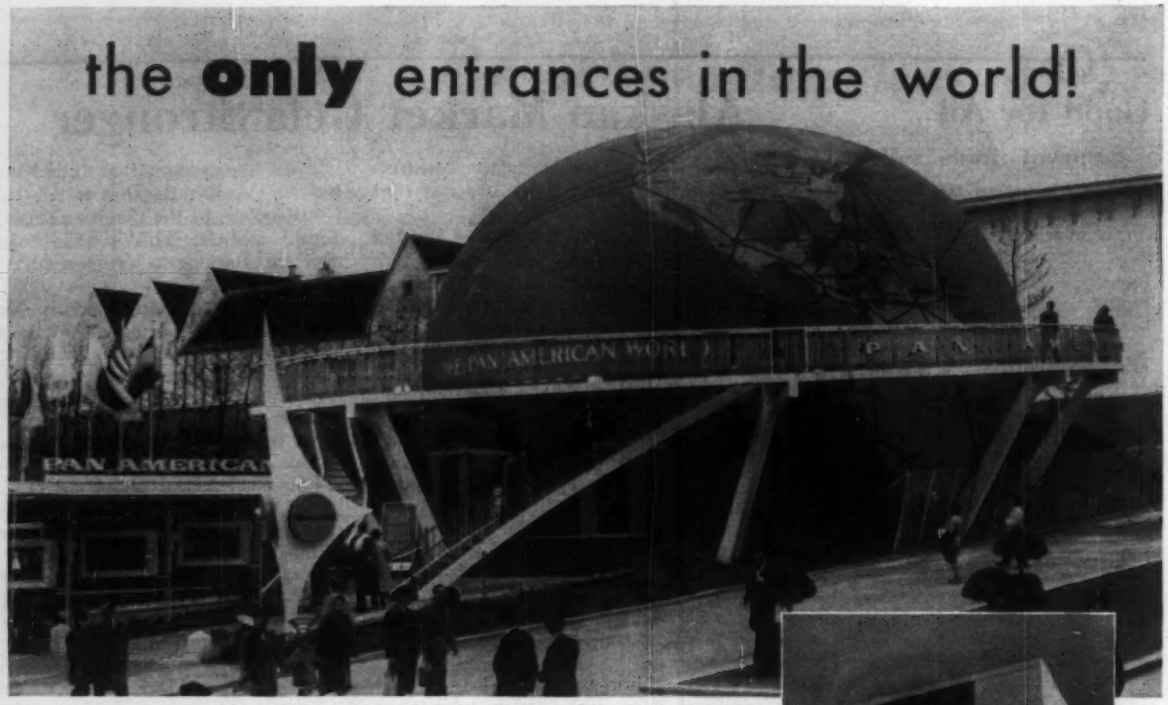

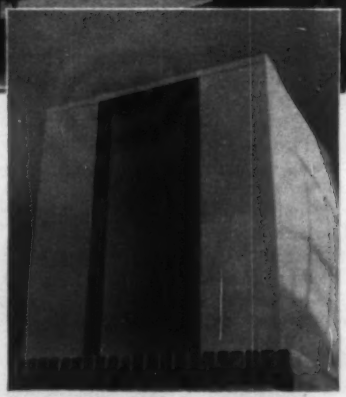

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Target: Better Labor Relations

Building employers come up with a plan for tighter industry coordination, closer labor cooperation

Are employers in the construction industry equipped to deal effectively with labor? What can they do to improve their position?

The Building Industry Employers of New York State has come up with some tentative answers.

It feels that building trades unions, at least in its area, are running with the labor relations ball. The group believes employers can no longer deal successfully with labor problems while acting individually or collectively through small, localized, uninformed, apathetic or disorganized trade associations. It believes the days of isolation and stubborn autonomy are gone forever.

The association suggests a two-fold change in its own approach to the problem:

- Sponsorship of a joint labor-management effort to crystallize the thinking on some of the industry's pressing labor problems to see what voluntary solutions, if any, can be reached.
- Stronger and more effective trade association activity, including inter-association cooperation, to give employers the strength that can be achieved through knowledge and through unity of thought and action.

These suggestions were endorsed at the association's 63rd annual convention in New York City last week.

• **Caught off base**—BIE's new labor relations approach grew out of a lesson learned the hard way in upstate New York last summer.

It has been the practice of BIE affiliates to handle labor relations for their own areas. This, of course, includes collective bargaining.

In May, the tables were turned by the iron workers union when its District Council of Western New York and Vicinity announced it would do the negotiating of new labor contracts—and on an area-wide basis along a 300-mile front.

The autonomous and uncoordinated local builders exchanges were caught completely unprepared. They formed a joint negotiating committee at the eleventh hour, however, and made the best of a bad situation.

Contractors in the Syracuse, Utica, Rochester, Albany, Elmira, Binghamton, and Niagara Falls areas were struck simultaneously on June 16. The strike dragged on for eight weeks, stalled millions of dollars worth of construction, idled some 20,000 construction workers, went into mediation and ended in a two-year, 40 to 42½ cent wage settlement that gave the struck areas a uniform wage scale of $3.67½ cents an hour.

Asked what the strike accomplished, a spokesman for one struck group observed: "It was successful to the extent it woke contractors up to the need for joint action."

"This experience," says BIE, "pointed up a need in our industry of better organization and the establishment of a state-wide employer committee to discuss, in advance of any negotiations, the demands of labor, labor conditions, and other problems the industry might be faced with."

Such a committee has now been established. It consists of the secretary of each affiliated exchange or association and the president of each exchange or his alternate.

The committee is to meet monthly, or more often as circumstances dictate. It is supposed to be a clearing house for information, ideas and plans and is expected to coordinate the thinking of employers in the state.

• **Common problems**—The area-wide strike action has also stimulated BIE-member interest in the association's efforts to explore with labor—and perhaps to solve—some of the industry's "paramount" labor problems.

A joint labor-management conference has been established. It's believed to be the first of its kind in the nation. It is sponsored by BIE and the New York State Building and Construction Trades Council, AFL-CIO.

Topics agreed on for discussion are these: unqualified contractors; hiring practices; area-wide agreements; long-term contracts and jurisdictional disputes.

The joint conference held its first meeting at Cornell University in October. Since then, five committees have been appointed—one for each topic. Three representatives from labor and three from management are on each committee. Management members will meet next month, when the labor committee holds its next meeting, and will later report back to the full conference.

• **A beginning**—Although the work of the labor and conference committees is still in the exploratory stage, the BIE actions mark the beginning of a state-wide effort to make employer bargaining more effective and to end some of the chaos, confusion and avoidable waste in labor relations.

Some of the broad areas of present and potential labor problems have at least been defined. And BIE is now trying to determine what specific problems each of the areas embraces and in what direction and how far its affiliates might be willing to go in seeking solutions.

Typical of the questions it still must answer are these: Should we espouse area-wide bargaining for all trades? How big should an "area" be? Do we want long-term contracts? On what conditions? Are uniform termination dates essential? How can we prevent whipsawing by unions? Is some form of machinery for settlement of jurisdictional disputes on a state-wide basis desirable or feasible? How much of our autonomy are we willing to relinquish for the common good? How can we get other trade associations, such as the Associated General Contractors of America, to support our objectives?

BIE hopes the upshot of it all will be more intelligent cooperation between labor and management and a better sense of direction and a more rewarding cohesiveness on the part of employers.

Hysteria Is Ruled A Compensable Injury

The Wisconsin Supreme Court has ruled that traumatic neurosis or hysteria resulting from an industrial accident is a "compensable injury."

The decision was handed down in a suit against the Walco Engineering and Construction Co. of Tulsa, the company's insurer and the state.

The court declared that while it has "not heretofore held that traumatic neurosis (from which the worker was found to be suffering) is compensable under the Workmen's Compensation Act, we believe that traumatic neurosis or hysteria caused by an industrial accident is a compensable injury."

(*Labor continued on page 86*)

Court Cracks Down on Hoffa

Ruling in favor of monitors kills Chicago convention plans and may indirectly affect other building trades

A federal court last week reaffirmed its right and its intention to curb the power of teamster president James R. Hoffa. In doing so, it may encourage stronger anti-corruption moves against other building trades unions.

The blow to Mr. Hoffa was dealt by Judge F. Dickinson Letts in Washington, D. C. It marks the first big setback for Mr. Hoffa. The teamster chieftain had previously won a series of criminal cases and legal challenges to his union stewardship.

The decision by Judge Letts, clarifying his original order appointing the teamster monitors, went against the teamsters on almost all points. The key decisions were:

- The monitors' clean-up orders must be complied with.
- The teamsters cannot hold a March convention to re-elect Mr. Hoffa and to dispose of the monitors.
- Mr. Hoffa and his aids face possible ouster from office by Judge Letts if they fail to comply with the orders.

The teamsters promised a quick appeal of the ruling. That will keep the final outcome in the courts for some time.

• **Anti-corruption drive**—The decision, meanwhile, may bolster AFL-CIO president George Meany's anti-racketeering campaign in two directions:

• **Carpenters union president Maurice Hutcheson is already on the carpet before the AFL-CIO Executive Council** for defying a Congressional committee and for his part in an Indiana land-buying scandal. The council is divided on punishment of the big carpenters union; the Letts decision is apt to give added weight to the punishment bloc, led by United Auto Workers' chief Walter Reuther.

• **The sheet metal workers union is facing trouble with the AFL-CIO Ethical Practices Committee** in the wake of Senate Labor Racket Committee hearings showing alleged employer payoffs to members of the craft union. The legal blow to Mr. Hoffa could result in stronger action in this case too.

Actually, the Letts ruling is the first big victory for Mr. Meany and his backers over the Hoffa-run teamsters since that union's ouster from the federation on corruption charges last year.

Just as the Letts ruling was issued, the teamster executive board, meeting at Miami Beach, announced massive new organizing drives in the retail trades and for government workers, including police and firemen. The Letts decision will slow these drives down until the litigation is settled.

With Mr. Hoffa absorbed in new court tangles, the bargaining position of Mr. Hutcheson and the sheet metal workers union with the AFL-CIO is considerably diminished. These unions could argue, up until now, that "the AFL-CIO clean-up program is hardly effective, so why make trouble for us?"

There still will be behind-the-scenes efforts within the AFL-CIO Executive Council to temper the dispute with the carpenters before Mr. Hutcheson appears in February to answer charges.

Mr. Hutcheson failed to appear at the last council meeting in November, and instead led his union convention to reject the AFL-CIO ethical practice codes. The convention also authorized Mr. Hutcheson to pull his union out of the federation if necessary.

While this was considered to have strengthened the carpenters' hand, Mr. Hoffa's new problems may offset this advantage. Mr. Reuther has already proclaimed that the council "is not going to be intimidated" by the carpenters' convention action.

• **The Letts decision**—Judge Letts' decision grew out of a court showdown between the teamsters union and the monitors. The monitors had been appointed by the court to supervise the union's house cleaning.

For the last several months the monitors have complained that the teamster leaders have refused to comply with their recommendations. The teamsters countered that the monitors' power was limited to making recommendations, and that's all. Then Mr. Hoffa moved for a convention in March to end the whole arrangement.

Besides ordering the teamsters to cancel the convention call, Judge Letts gave specific orders to the teamsters to comply with the monitor directives. He also voided a teamster constitutional provision restricting the eligibility of candidates for teamster office. Judge Letts called the provision "discriminatory."

Is an Engineer a Supervisor?

Employed professional engineers who direct the work of less experienced engineers are not necessarily "supervisors" in the eyes of labor law.

That is the view expressed by a National Labor Relations Board panel in a contest over inclusion of a number of senior project engineers in a collective bargaining unit for representation election purposes. The engineers are in the Engineering and Construction Division of Pennsylvania Power and Light Co.

The company contended that senior project engineers who direct the work of project engineers should not be included because they are supervisors. The board disagreed.

• **Simple assistance**—The company's senior project engineers are sometimes assigned project engineers as assistants, depending on work loads and the experience or specialization of the senior engineer.

It is company practice to require all engineers who work with assistants to make out periodic merit rating reports on the work of the subordinates.

The company argued that senior engineers are supervisors because they "responsibly direct" the work of the project engineers assigned to them and, through the merit rating reports, do have something to do with their promotions and salary increases.

The board was not impressed. "We are satisfied," it said, "that the direction exercised by the senior project engineers, who have no formal responsibility beyond the project specifically asigned to them, is not of a supervisory nature."

• **Too unrealistic**—The board noted that if the company argument prevailed, the organization would be unrealistically top-heavy with supervisors.

The ratio of supervisors to rank-and-file employees, the board concluded, becomes "highly persuasive" in denying the request for exclusion.

The union that petitioned for the election is Utility Engineers Association, an affiliate of Engineers and Scientists of America. Another union, the Employees Independent Association, intervened.

AFL-CIO Seeks a Broader And Higher Minimum Wage

The AFL-CIO launched a new campaign to increase and extend the minimum wage this month at a Washington conference celebrating the 20th anniversary of the Fair Labor Standards Act.

Labor's goal is a boost in the wage from $1.00 to $1.25 and extension of coverage to 10 million more workers.

If successful, the campaign will affect the construction industry in two ways:

- It will bring more construction workers under the law's coverage.
- The influence of the higher wage level will fan out to all industries by setting a higher floor under all wages.

The law applies to workers "engaged in commerce or in the production of goods for commerce," unless specifically exempted. A growth in the exemptions and restrictive definitions of "interstate commerce" have narrowed the law's application. The AFL-CIO would amend the law to reverse this.

A minimum wage even higher than $1.25 was recommended at the conference by Leon Keyserling, chairman of the President's Council of Economic Advisers under former President Truman. Mr. Keyserling suggested $1.50 or more in order to bolster consumer purchasing power.

A Labor Political Party Is Suggested as a Threat

AFL-CIO President George Meany alarmed the public and startled labor last week by declaring that organized labor will form its own political party if forced to do so.

Speaking at the first convention of the newly organized New York State AFL-CIO, Mr. Meany stated: "I have always said we do not want our own political party, but if we have to do that to lick the people who want to drag us back to the past, we will start our own political party and do a good job of it."

Walter Reuther immediately tried to change the tune. He suggested that Mr. Meany had been "misunderstood" and explained: "The American labor movement is committed to work within the framework of the two-party system. A labor party is wrong because it would further fragmentize our society."

Mr. Reuther was restating the Samuel Gompers philosophy of legislative progress through endorsement and active support of political candidates friendly to labor.

The last election indicated that this approach has been successful and there is little evidence that Mr. Meany's declaration amounts to more than a spectacular blast against anti-labor forces.

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Made from high quality blown sponge rubber, uniform in thickness and density, "Cementone" is available in cut strips or sheets in standard thicknesses of ¼", ⅜", ½", ¾" and 1" in lengths up to 10 ft. For greater thicknesses, "Cementone" may be laminated.

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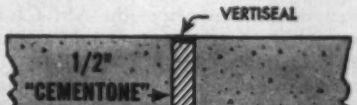
"Cementone" Sponge Rubber used on wall sections with column vertical joint.



Sealing a butt joint of precast wall panels. Vertiseal is used to seal the exterior face.

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Threats of Secession Continue

AFL-CIO efforts to complete labor mergers at the local level reflect dissension of building trades unions

The AFL-CIO moved further along the rocky road to labor unity last week. But the building trades unions kept alive their threat to secede from the federation unless something is done to protect their jurisdictional interests.

AFL and CIO forces at the state level merged in California and New York after three years of wrangling. And the path was cleared for local mergers in Cleveland and Toledo.

The jurisdictional conflict between craft and industrial unions over industrial construction work was a stumbling block in every instance. Building trades' reluctance to accept the AFL-CIO ban on alliances with the expelled teamsters union fanned the flames of dissension.

Even in the previously merged state of Texas, discontent continued to rumble.

• **California: Misgivings**—The labor marriage in California took place with noticeable misgiving. Some called it a "shotgun wedding."

Even before the wedding march was played, the California State Building and Construction Trades Council served notice that it will return the ring unless invasion of building trades' jurisdiction by former CIO unions is halted.

It condemned the performance of in-plant construction, alteration and repair work by members of industrial unions "with complete disregard for the express provisions of the AFL-CIO constitution" and adopted a resolution demanding it be stopped.

The resolution authorizes the Executive Council to "take all necessary action, including requesting the Building and Construction Trades Department to withdraw from the AFL-CIO, to protect the craft jurisdiction of the building trades unions."

And in defiance of AFL-CIO orders, the state council also accepted credentials from teamster construction and building materials local unions and retained teamsters in council officers' posts.

• **New York: Warning**—A similar but less outspoken note of warning came from the New York building trades unions just before their merger.

Peter J. Brennan, president of the New York City and New York State Building and Construction Trades Councils, said that unanimous approval of a merger at the state level should not be taken as construction union capitulation in the jurisdictional fight with industrial unions.

"Let's go in unanimously," he said, "but remember that if you lead in, you can lead out."

He also suggested that some way be found to get the teamsters into the state organization.

• **Ohio: Agreement**—Meanwhile, building trades unions in Toledo and Cleveland have agreed to the elimination of any jurisdictional provisions in the merger constitutions.

The unions felt the time to protect their jurisdictional rights was before, not after, a merger. John Breidenbach, president of the Ohio State Building and Construction Trades Council, has been a staunch defender of craft jurisdictional rights and an outspoken critic of the AFL-CIO's failure to protect those rights.

The local action occurred after the AFL-CIO refused to approve any local constitution that provides for the settlement of craft-industrial union disputes. The authority to establish a settlement formula has been pre-empted by the parent federation.

An example of such a conflict was in the making at the time of the local capitulation. The Maumee Valley District Council of Carpenters is quarreling with members of the United Auto Workers union over installation of used machinery in a new plant. The council says the matter is coming to a head and a strike may be called.

• **Texas: Threats**—Secession from the AFL-CIO has also been threatened by the Texas State Building and Construction Trades Council.

The jurisdictional grievances of the building trades were aired at the state federation's second annual convention, recently held in Houston. The unions claim the CIO is robbing them of jobs and threatening their wage standards.

John E. Flowers, secretary of the state council, issued this warning on behalf of the state's 45,000 AFL-CIO construction workers: "If this condition continues, we'll fight back and we'll probably pull out of the Texas State AFL-CIO and build a stronger building trades council."

OFFICIAL PROPOSALS

Bids: January 27, 1959

McKeesport Sewage Treatment Project

Sealed proposals will be received by the Municipal Authority Of The City Of McKeesport, 201 National Bank Building, Fifth Avenue and Sinclair Street, McKeesport, Pa. until 10:00 A.M., Eastern Standard Time, January 27, 1959, and will be publicly opened and read shortly thereafter in the City Council Chamber on the sixth floor of the Peoples Union Bank Building, Fifth and Walnut Streets, McKeesport, Pa.

Separate proposals will be received upon nine (9) parts of the project as hereinafter indicated. Each proposal shall be accompanied by a certified check or Bid Bond in an amount not less than ten (10) per cent of the bid total.

Copies of the Contract Documents may be seen at, and obtained from the office of Gannett Fleming Corddry and Carpenter, Inc., (P. O. Box 5073) Pittsburgh 6, Pa.; they may also be seen at (but not obtained) at their office at 600 North Second Street, Harrisburg, Pa., and at the office of the Municipal Authority Of The City Of McKeesport, 201 National Bank Building, McKeesport, Pa. No more than two (2) sets of any particular contract may be obtained by a prospective bidder. A deposit of the amounts indicated below will be required for each set. Deposit checks shall be made payable to Gannett Fleming Corddry and Carpenter, Inc.

Contract One—CONSTRUCTION OF INTERCEPTING SEWERS, SEWAGE REGULATORS, FORCE MAINS, SIPHONS AND APPURTENANCES.$60.00
(Part A) Construction of the Upper Monongahela River Interceptor, Sewage Regulators and Appurtenances.
(Part B) Construction of the Lower Monongahela River Interceptor, Sewage Regulators, Force Mains, Siphon, and Appurtenances.
(Part C) Construction of the Youghiogheny River Interceptor, Sewage Regulators, Force Mains, Siphon, and Appurtenances.
(Part D) Construction of the Long Run Interceptor and Appurtenances.

Contract Two—GENERAL CONSTRUCTION OF SEWAGE TREATMENT PLANT, OUTFALL SEWER, ROADS, PUMPING STATIONS AND APPURTENANCES $60.00

Contract Three—PLUMBING WORK IN CONNECTION WITH CONSTRUCTION OF SEWAGE TREATMENT PLANT AND PUMPING STATIONS.....$25.00

Contract Four—HEATING WORK IN CONNECTION WITH CONSTRUCTION OF SEWAGE TREATMENT PLANT AND PUMPING STATIONS.....$25.00

Contract Five—ELECTRICAL WORK IN CONNECTION WITH CONSTRUCTION OF SEWAGE TREATMENT PLANT AND PUMPING STATIONS.....$25.00

Contract Six—EQUIPMENT AND PIPING IN CONNECTION WITH CONSTRUCTION OF SEWAGE TREATMENT PLANT AND PUMPING STATIONS $60.00

Full refund will be made (only to actual bidders on the six (6) prime contracts noted above) for return of one (1) set, no more, of a particular contract in good condition within fifteen (15) calendar days after closing date for receipt of bids; refund for return of all other sets in good condition within the same period, will be fifty (50) per cent of deposit. No refund will be made for Contract Documents returned later than fifteen (15) calendar days after date of receipt of bids.

A Bidder may submit proposals on any or all of the four (4) parts of Contract One.

Bidders offering separate proposals for Contracts Two and Six, or for Contracts Three, Four, and Six, may also submit combination proposals for Contracts Two and Six, or for Contracts Three, Four, and Six, respectively.

THE MUNICIPAL AUTHORITY OF THE CITY OF McKEESPORT.
Gannett Fleming Corddry and Carpenter, Inc., Engineers.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.40 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Bids: December 30, 1958

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 30th day of December 1958, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following Projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. NICKERSON, District Engineer, 353 Broadway, Albany 1, New York						
Greene (Rte. 385)	FARC 58-167	Catskill-Athens, S. H. 5367 Proj. F-365(8)	0.67	Asphalt Concrete = 0.66 Mile Miscell. Work = 0.01 Mi. Comp. W-F Beam Bridge 123'	$21,000 Plans $5	$386,000
Saratoga & Warren (Int. Tour. Rte. 87)	FISH 58-19	Interstate Route 502 (Route 9 to North Bank of Hudson River); Glens Falls-Saratoga, Pt. 1, S.H. 58; Spiers Falls Co. Rd. 24; Spiers Falls Road-Redmond Road Connection & Butler Road Proj. I-1119(24)	2.74 (5.00 Acc.)	9" Cem. Conc. Pavt. 2 @ 24' Var. Wide = 2.69 Miles Cement Conc. Pavt. (Ramps) = 2.69 Mi. Asphalt Conc. = 1.28 Mi. Top Course Graded Gravel = 0.91 Mi. Miscell. Work = 0.17 Mi. 4 Hy. Segs. Comp. I-Beams 364.3' (3 Sp.), 135.5' (3 Sp.), 140.3' (3 Sp.) & 247' (4 Sp.) 1 Bridge Comp. Weld. Plate Girder 728' (3 Sp.)	$350,000 Plans $10	$6,369,000
Schenectady (Int. Tour. Rte. 890)	FIC 58-28	Interstate Route Connection 550 (Campbell Rd. to Crosstown Connection) Proj. I-323(15)	0.23	Demolition of Buildings	$2,000 Plans $5	$37,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage) Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

Bids: January 13, 1959

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS

For Construction of Additional Access Road, Utilities, Boat Facilities and Site Development on Barnhart Island near Massena, St. Lawrence County, New York
Specifications No. PA-5-11045
St. Lawrence Contract No. 51

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for Construction of Additional Access Road, Utilities, Boat Facilities, and Site Development on Barnhart Island, near Massena, St. Lawrence County, New York, until 10:30 A.M., Eastern Standard Time on the 13th day of January, 1959, at the Authority's office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The estimated quantities of the principal items of work are as follows:

Excavation, unclassified	9,000 cu. yds.
Embankments	10,600 cu. yds.
Foundation course gravel	3,370 cu. yds.
Asphaltic concrete pavements	310 cu. yds.
Reinforced concrete	186 cu. yds.
Concrete terraces	370 sq. yds.
Water supply well	180 lin. ft.
Topsoiling and seeding	3.2 acres
Floating dock and ramp	1 each

All work shall be completed on or before August 1, 1959.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set of contract documents, and Five Dollars $(5.00) per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of gross sum bid.

The right is reserved to reject any or all bids.

W. S. Chapin
General Manager

Prequalification Date: December 24, 1958

Board of Education Bureau of Construction

Notice Re: Prequalification Forms for Contractors
APPROVED AS TO FORM
Acting Corp. Counsel

NOTICE IS HEREBY GIVEN THAT The Superintendent of School Buildings, Bureau of Construction, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, N. Y. will receive applications for prequalification from contractors who may wish to submit bids for the proposed hereinafter specified contracts as follows:

general construction, plumbing and drainage, heating and ventilating, electrical work and lighting fixtures.
Public School 100, The Bronx
Lafayette Avenue, between Taylor & Theriot Ave's.
Junior High School 141, Queens New Add. & Mod.
21st Avenue and 37th Street, Astoria.

Prequalification application forms will have to be secured from and must be submitted to the Superintendent of School Buildings, Bureau of Construction, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, New York.

Bids when advertised, will be received from prequalified bidders only.

Time for submitting prequalification applications by contractors will expire on Wednesday, December 24, 1958.

WILLIAM H. CORREALE
Superintendent of School Buildings
Design and Construction
Dated: December 9, 1958

U. S. Government

United States Department of Commerce, Bureau of Public Roads, December 18, 1958. SEALED BIDS will be received at the office of the Inter-American Highway Division, Bureau of Public Roads, Room 3009, General Services Building, Washington 25, D. C., until 2:00 p.m., E.S.T., January 22, 1959, for the construction of Project 9-A on the Inter-American Highway in the Republic of Nicaragua. The project consists of the construction of 35 miles of crushed aggregate base and bituminous surface treatment on previously graded roadbed from the Honduras border to Condega. Bidders will be limited to United States or Nicaragua firms with a satisfactory record of performance on highway construction in the United States of America or in the Republic of Nicaragua. The approximate quantities of the major items of work are: 20,000 cubic meters special subbase, 55.7 kilometer finishing previously graded roadbed, 51,000 cubic meters crushed aggregate base, placing 15,000 cubic meters crushed aggregate base from Government stock piles, 175,000 gals. MC2 asphalt, 310,000 gals. RC-3 or alternate 265,714 gals. 150-200 penetration, 10,200 cubic meters cover aggregate. Plans, Specifications and Proposal Forms will be furnished to prospective bidders upon request at the address given above, or at the Inter-American Highway District Office, Bureau of Public Roads, 203 Carlos Palazio Bldg., Calle 5aN., Managua, Nicaragua. Paul F. Royster, Asst. Commissioner for Operations.

Department of Commerce, Bureau of Public Roads, December 9, 1958. SEALED BIDS will be received at the office of the Regional Engineer, Bureau of Public Roads, 1440 Columbia Pike, Arlington 4, Virginia, until 11:00 a.m., E.S.T., JANUARY 8, 1959, for Contract 1, Woodrow Wilson Memorial Bridge, Prince Georges County, Maryland. The approximate quantities of the more important items of work are 100,000 cu. yd. Underwater Excavation at Embankment Sites and 950,000 cu. yd. Hydraulic Embankment. Length: 0.306 mile. Minimum wage rates have been fixed as required by law. Plans, specifications, and proposal forms are available upon request at the address given above. A. F. Ghiglione, Regional Engineer.

OFFICIAL PROPOSALS

INVITATION FOR BIDS—ALEXANDER HAMILTON AIRPORT, ST. CROIX, VIRGIN ISLANDS, PROJECT NO. SC-2-18-40, GOVERNMENT OF THE VIRGIN ISLANDS, BY CONTRACTING OFFICER, DEPARTMENT OF PROPERTY AND PROCUREMENT, DIVISION OF PROCUREMENT. Sealed bids in single copy for furnishing all labor, equipment and materials and performing all work for the project described herein will be received until 2:00 P.M. Atlantic Standard Time Jan. 15, 1959, in the office of the Division of Procurement, Old Grammar School Building, Kings Street, Christiansted, St. Croix, Virgin Islands (First floor-Western Section), and then *publicly* opened. Information regarding bidding material, bid guarantee, and bonds, plans and specifications and other contract documents are open for public inspection at the Office of the Commissioner of Public Works, Charlotte Amalie, St. Thomas, Virgin Islands; Deputy Commissioner of Public Works, Christiansted, St. Croix, Virgin Islands; Bellante and Clauss, Architects-Engineers, Mears Building, Scranton, Penna.; Deputy Public Works Advisor, Office of Territories, Department of the Interior, Interior Building, Washington 25, D. C.; A.G.C. Office, 1113 Congress Building, Miami, Florida; Division of Procurement, Old Grammar School Building, Kings Street, Christiansted, St. Croix, Virgin Islands (First Floor-Western Section); Builders Exchange, 46 N. E. 6th Street, Miami, Florida and Home Finance Agency, Community Facilities Administration, 1608 Ponce de Leon Avenue, Santurce, 17, Puerto Rico. Plans and Specifications may be procured from Bellante and Clauss, Architects-Engineers, Mears Building, Scranton, Penna., or the Division of Procurement, Old Grammar School Building, Kings Street, Christiansted, St. Croix, Virgin Islands (First Floor-Western Section) upon deposit of $50.00 which shall be refunded to bona fide bidders upon the return of the plans and specifications in good condition within twenty (20) calendar days from the date of bid opening. To persons who procure plans and specifications upon the deposit of $50.00 and who do not submit a bid, one half the amount deposited will be refunded upon the return thereof in good condition within ten (10) calendar days from the date of bid opening. No refund will be made for return after that time. Each bid must be accompanied by a satisfactory bid security (certified check or bid bond) in an amount not less than 5% of the total bid in dollars and cents. The successful bidder will be required to furnish a performance and payment bond, each in the amount of 100 per cent of the contract price. No bid may be withdrawn until forty five (45) calendar days after the scheduled closing time for the receipts of bids. The Government reserves the right to award a contract for the project on the basis of the acceptance of any or all of the schedules or alternates, whichever course is in the best interest of the Government of the Virgin Islands. DESCRIPTION OF WORK:—Perform all work for the redevelopment of Alexander Hamilton Airport which project includes grading and paving of airfield runway, taxiway, aircraft parking apron grading and pavement, access road and auto parking, grading and pavement, airfield lighting, a terminal building, a fire and crash maintenance building and allied utilities. Wages paid on this contract must equal the minimum as stated in the Department of Labor Decision of the Secretary of Labor No. T-3,337 dated October 1, 1958. Copy attached.

U. S. Government

General Services Administration Public Buildings Service—On December 18, 1958, bidding material for construction (except elevator Plant and Escalators) of the Headquarters Buildings, Central Intelligence Agency, Langley, Virginia, will be available for distribution to general contractors. Applications from general contractors interested in bidding on this work, for not to exceed three sets of drawings and specifications, should be filed promptly with this office and the bidding material will be forwarded as soon as available. Bids will be opened on February 5, 1959. Bidding material will be available at Room No. 1304, General Services Building, 19th and F Streets, N.W., Washington 25, D. C., Phone EXecutive 3-4900, Extension 2397. Commissioner of Public Buildings, General Services Administration.

OFFICIAL PROPOSALS

Bids: January 13, 1959

Contract NYA-920.006

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
RUNWAY V
ELECTRICAL INSTALLATION

Sealed proposals for the performance of Electrical Alterations for Navigational Aids at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, January 13, 1959 at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, December 18, 1958

Bids: January 7, 1959

Washington Suburban Sanitary Commission Contract No. 2094-W Potomac River Water Supply Development

Sealed proposals for the first contract on the Potomac River Water Supply Development at Watts Branch, Montgomery County, Maryland, which involves the construction of the intake structure, raw water pumping station, finished water pumping station, finished water reservoir, underground piping, other pertinent structures and site improvement, will be received at the office of the Secretary of the Washington Suburban Sanitary Commission, 4017 Hamilton Street, Hyattsville, Maryland, until Wednesday, January 7, 1959 at 12:30 P. M., Eastern Standard Time, at which place and time they will be publicly opened and read.

Plans and Specifications for this contract may be obtained from the office of the Chief Engineer of the Commission upon payment of $30.00, which is not refundable.

T. Earle Bourne, Chairman
Frank L. Hewitt, Jr., V-Chairman
J. Norman Ager
James B. Bland
Willard A. Morris
L. S. Ray
Commissioners

Attest:
John T. Bonifant
Secretary

Bids: January 13, 1959

Comision Ejecutiva Hidroelectrica Del Rio Lempa

Sealed Bids (Contract Documents 198-3) will be received at San Salvador, El Salvador, C.A. until 4:00 PM, CST, January 13, 1959, for furnishing labor, materials, and equipment for Excavation of Desague Canal, Cuija Project located in the area of the Rio Desague situated in the Northwestern part of El Salvador. Principal items are common excavation, canal, 117,000 cubic meters; rock excavation, canal, 800 cubic meters; stockpiling selected materials 8,000 cubic meters; blanketing sinkholes 30,000 cubic meters. Completion time 730 calendar days.

The contract documents require prequalification of bidders and the following information must be submitted for prequalification: list of similar work with dates, total amount of contract and references from clients, list of equipment available for the work, and ownership of same, statement of financial resources, and banking references. All prequalification information must be sent to both the Comision Ejecutiva Hidroelectrica Del Rio Lempa, Edificio Duenes, 4° piso, San Salvador, El Salvador, Central America and Harza Engineering Company, 400 West Madison Street, Chicago 6, Illinois, USA. Contract documents will automatically be issued to qualified bidders.

Bids must be submitted in triplicate in accordance with the Instructions To Bidders. A bid bond or certified check as guarantee in the amount of 20,000 Colones of El Salvador or the equivalent in US Dollars will be required with each bid.

The right is reserved to make award on any bid or to reject any or all bids.

OFFICIAL PROPOSALS

Bids: December 30, 1958

Contract LGA-332.372

THE PORT OF NEW YORK AUTHORITY
LA GUARDIA AIRPORT
ADDITIONAL BORINGS

Sealed proposals for making additional borings at La Guardia Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, December 30, 1958, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, December 18, 1958

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5126) will be received at Anadarko, Oklahoma until 10 a.m. Central Standard Time, January 20, 1959, for furnishing labor and materials for earthwork, structures and concrete pipe, Anadarko aqueduct, Western Farmers Electric Cooperative Lateral, Fort Cobb Lateral, Washita Basin Project, Oklahoma. Location near Anadarko, Oklahoma in Caddo County. Principal items are 189,000 cu. yds. excavation; 110,500 linear feet precast concrete pipe 15 to 33 inches in diameter; and other work. Completion time 500 days. For particulars, address Bureau of Reclamation P.O. Box 84, Anadarko, Oklahoma; P.O. Box 1609, Amarillo, Texas; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5129) will be received at Stockton, Kansas until 10 a.m. Central Standard Time, January 22, 1959, for furnishing labor and materials for earthwork and structures, Osborne Canal, Station 335+54.1 to Station 1069+64.4, and laterals and drains, Webster Unit, Kansas, Missouri River Basin Project. Location west of Osborne, Kansas. Principal items are 715,000 cu. yds. excavation; 2,225 cu. yds. concrete in structures; 26,240 lin. ft. concrete pipe; lump sums, furnishing and installing 4 pumping plants, 8 pumping units, and other materials and equipment; and other work. Completion time 460 days. For particulars, address Bureau of Reclamation, P.O. Box 841, Stockton, Kansas; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

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The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

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$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

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Send to office nearest you.
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CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• POSITIONS VACANT

Assist. Prof.—To teach undergrad. courses in structures and mechanics. Salary open. Civil Eng., Univ. of No. Dak., Grand Forks.

Electronic Computer Application Engineer Wanted. Midwestern consulting Engineering firm needs graduate engineer experienced in electronic computer application to engineering problems. Reply in detail to P-9211, Engineering News-Record.

Mechanical Engineers—Experienced in design calculations, equipment selection and arrangement, process and service piping layouts for chemical plants or paper mills. Position with Consulting Engineering firm in Georgia. State education and experience. P-9360, Engineering News-Record.

Mechanical Engineer for permanent position in medium sized Engineering Department. Exceptional advancement opportunities with a growth company. Prefer man with 5 to 10 years experience and with M.E. degree or equivalent. Familiar with design and construction of electrical and mechanical machines and equipment. P-9355, Engineering News-Record.

Wanted—Estimator to assemble complete general construction bids. Must be heavy on concrete and masonry. Westchester contractor. P-9369, Engineering News-Record.

Estimator—At least five (5) years experience estimating institutional, commercial and industrial construction under our Chief Estimator in Ohio-Michigan area. Graduate Engineer preferred but not necessary. Salary commensurate with experience. Good opportunity for right man. P-9414, Engineering News-Record.

Wanted: Office Manager and Accountant for firm in sewer and bridge construction. State all qualifications, experience, and salary expected. Location, Southern Indiana. P-9429, Engineering News-Record.

Have opening for several resent Civil Engineer Graduates with military obligations completed who desire to learn the construction business. Must be ambitious, aggressive, dependable, use no intoxicants, preferably single, willing to start in the field on industrial buildings and heavy construction, and willing to move. We operate throughout Kansas and adjacent states. Our organization offers excellent opportunity for advancement. We pay top wages. Martin K. Eby Construction Co., Inc., P. O. Box 1679, Wichita, Kansas.

Reinforcing Detailer with a minimum of five years experience. Excellent starting salary and usual benefits. Opportunity for advancement. Brocker Mfg. & Supply Co., York, Pennsylvania.

Construction Engineer—Opportunity to join a new, growing, young general contractor operating in Penn., Md., W. Va., specialising in high class commercial, industrial, institutional work—contract and private. Send resume to P-9484, Engineering News-Record.

Traffic Engineer to head county traffic engineering. CE with grad work traffic. Min 1 yr exp respn chge traffic engr. Duties traffic studies, plans for signals, signs etc. Mail brief resume to Board of County Commissioners, Jefferson County Court House, Golden, Colo.

• POSITIONS VACANT

Projects Manager wanted for position with expanding general contracting firm with home office in Ohio; specializing in industrial, commercial, and public works. Top level management position for man experienced in organizing and managing jobs of considerable magnitude; extensively experienced in expediting, estimating, pricing, purchasing, and dealing with sub-contractors and owners. Must be ambitious, have intense initiative, and be willing to travel. Prefer a graduate engineer or equivalent. If you are lookinng for a permanent position with an aggressive concern, where you can exercise your abilities, and be well compensated for same, send complete history, including education, past experience, references, salary expected, and photograph, if available, to P-9495, Engineering News-Record. All replies will be held in confidence and promptly answered.

• POSITIONS WANTED

Const. Supt. 25 yrs experience in commercial buildings. Available now. PW-9328, Engineering News-Record.

Graduate Civil Engineer, age 33. Desires engineering or management position. Background of estimating and engineering on heavy construction, tunnel, and sewer work. Resume to all replies. PW-9361, Engineering News-Record.

Civil Engineer, BSCE from RPI, EIT, 24; 2 years experience in steel design, fabrication and estimating, 1 year heavy construction. Desire position with contractor, consultant or mfgr. in Conn., Mass., or Upstate N. Y. No military obligations. PW-9406, Engineering News-Record.

Construction Superintendent, Project Manager, Negotiator. Foreign and U.S. experience. Utilities, roads, mass housing, general construction. PW-9403, Engineering News-Record.

Prestressed Concrete Plant Manager or Superintendent BCE. 30. 8 years heavy construction experience in supervisory capacity including 4 years as Field Engineer, Plant Supt. and Plant Manager with major firm engaged in manufacture and installation of prestressed concrete structures. Desire locate in South or West Coast. PW-9425, Engineering News-Record.

Concrete Inspector, Canadian, recent immigrant. Age 30, 10 years experience in hydroelectric and heavy industrial concrete inspection. Member A.C.I. & A.S.T.M. Excel. references. Experienced all phases of control and construction. PW-9472. Engineering News-Record.

Chief Estimator—Graduate civil engineer, 35 years old. Responsible for estimates on multimillion dollar projects, buildings, sewage treatment plants, power houses, bridges. Careful, judicious buyer. PW-9446, Engineering News-Record.

Structural designer, 20 yrs. exp. on various steel & concrete structures. Four years on bridges. Cornell grad. East or mid-west. PW-9445, Engineering News-Record.

Former Contractor and heavy construction equipment superintendent, 20 years experience in Europe, South America and domestic desires superintendent's position on earthmoving project in Central or S.A. Now employed in S.A. PW-8860, Engineering News-Record.

POSITION WANTED

Construction Executive 36, Widower, C.E. Graduate. No children, desires foreign position preferably in Spain or South Africa, will consider other countries. Now managing branch office with $2,000,000.00 year volume, industrial, institutional, and Commercial. Qualified to handle all phases of Construction from actural supervision to office. Reply

PW-9504, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

• POSITIONS WANTED

Construction Supt. General Construction. PW-8896, Engineering News-Record.

Marine Const. Supt.—Footings—Piling—Prestressed concrete—steel erection—bridges—power houses—mechanical & structural. Available Dec. 15. PW-9485, Engineering News-Record.

Field Office Engineer—Estimator, 26, BSCE, heavy construction experience. Desires position with gen'l contractor. N. Y. Area. PW-9499, Engineering News-Record.

Estimator (40) available graduate engineer, registered. 15 years successful contracting experience with own company. Desires responsible position where talents and ability will be recognized and rewarded. Can do structural design. Will buy in if necessary. PW-9496, Engineering News-Record.

Full charge cost bookkeeper capable, trustworthy, efficient. Salary $90—$100. PW-9525, Engineering News-Record.

Construction Superintendent-Civil Engineer Thirty years varied experience embracing all phases of Engineering Construction and design-earthwork, municipal projects, refineries and ptro-chemical plants, industrial buildings. Executive and administrative ability. Seeking challenging responsible position. Available after January 1st. Free to travel. Southern location preferred. PW-9521, Engineering News-Record.

Process Design Engineer, 35, experienced industrial, process & nuclear piping; processing equipment, plant layouts. Will relocate. PW-9520, Engineering News-Record.

Architect-Engineers Representative. Construction Manager, age 47. P.E. 30 years experience in all types of Construction. Previous background General Manager, Chief Engineer and General Superintendent. Since 1955 have managed over thirty million dollars worth of construction. Now on East Coast. Will relocate. PW-9527, Engineering News-Record.

Contractors sup't. or engr. BSCE Highway structures & paving. PW-9529, Engineering News-Record.

Civ. Eng., P.E. Consultant on Bulk Conveyor Systems. Will prepare layouts, specs, est., and handle complete design proj. Will travel. PW-9535, Engineering News-Record.

When Answering
BOX NUMBERS . . .

to expedite the handling of your correspondence and avoid confusion, please do not address a single reply to more than one individual box number. Be sure to address separate replies for each advertisement.

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PERMANENT OPENINGS FOR QUALIFIED MEN EXPERIENCED IN THE DESIGN OR SPECIFICATIONS FOR

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PREFER GRADUATE REGISTERED ENGINEERS WHO SEEK LONG RANGE EMPLOYMENT WITH AMPLE OPPORTUNITY FOR PROFESSIONAL DEVELOPMENT AND ADVANCEMENT IN A STEADILY EXPANDING AND GROWING ORGANIZATION.

Paid vacation, sick leave, holiday, overtime. Excellent Employee Benefits Plan provides retirement income plus life and disability insurance. Blue Cross. Moving allowance.

Work will be in the general offices in St. Louis. Interviews can be arranged in Washington, D. C., and San Francisco also.

Please write fully, including salary data, to

SVERDRUP & PARCEL, Inc.
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Highway & Bridge Designers, Highway & Bridge Draftsmen
Openings in Pennsylvania, Ohio, Maryland & West Virginia

Career opportunities for individuals interested in professional recognition ample opportunity for advancement based on merit, plus employee retirement plan, group life insurance, hospitalization, paid vacation and holidays.

EXPERIENCE REQUIRED

Mail Resume To F. W. AHERN, Personnel Director

MICHAEL BAKER, JR., INC. *Consulting Engineers*
Baker Building Phone: SPruce 4-3010 Rochester, Penna.

RESIDENT ENGINEER

To supervise construction of 122 kilometer highway in Iraq. Fifteen years experience required. Excellent salary plus furnished house free for self and family. Approximately two to two and one half years term. Please send complete resume and specify salary required.

HARZA ENGINEERING COMPANY
400 W. Madison St., Chicago 6

SOILS ENGINEER

Long-established progressive company, known as a leader in stabilizing and dewatering excavations, offers permanent, rewarding research and development position on headquarters staff. You must have technological background and field experience in heavy construction work, with emphasis on ground-water seepage and pumping problems.

The Position offers many employee benefits, liberal salary commensurate with ability. Please send resume of experience, etc. Replies held in confidence. Our staff knows of this ad.

P-9509, E.N.R., 520 N. Michigan, Chicago 11, Ill.

FOREST FIRE RESEARCH

Salary $7500 to $10,000

United States Department of Agriculture, Forest Service opening new laboratory near Macon, Georgia, for fundamental research in forest fire behavior. Need men with training and research experience in the thermodynamics, fluid mechanics, heat transfer and energy release in combustion process of free burning fire, or related fields.

Positions will be filled in accordance with Civil Service requirements.

Opportunity for pioneering research, promotion, and interesting career, also important fringe benefits.

Direct inquiries, Southeastern Forest Experiment Station, Section C-3, United States Department of Agriculture, Forest Service, Asheville, N. C.

GIL BOERS EQUIPMENT COMPANY is Expanding

and is interested in several experienced CONSTRUCTION EQUIPMENT SALESMEN

Contact: WARREN THOMSON
Sales Manager

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Phone PRospect 6-4000 for Interview

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For detailing Reinforcing Steel, Steel Joists, and similar products. Only those experienced in this or allied fields will be considered. Permanent position, air-conditioned office, 40 hour week, retirement plan, paid vacations, hospitalization and Group insurance plans. Location Richmond, Virginia.

Reply giving brief resume of experience, education and salary expected.

P-9399, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

STRUCTURAL STEEL DESIGNERS & ESTIMATORS

Wanted immediately. Must be experienced and have good personality. Opportunity to be branch office manager. Prefer man in forties.

This leading Southern company has plants located in six cities.

Replies will be held in confidence. Interviews arranged with qualified applicants.

Please send complete resume to

P-9454, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

DISTRICT REPRESENTATIVE

Large manufacturer of heavy duty earthmoving equipment is seeking high calibre sales representative. Substantial previous experience in this industry, either with a dealer or manufacturer, is required. Must be flexible as to location, age 30 to 45, college training desirable. Send a resume which fully describes your qualifications, education, experience, and past earnings to

RW-9461, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

WANTED

First-class, experienced building Estimator for responsible position with established contractor. Salary commensurate with qualifications and responsibility.

J. M. ODOM, General Contractor
P. O. Box 774 Austin, Texas

WANTED

ESTIMATING ENGINEER

Midwestern consulting engineering firm needs engineer with estimating experience for contractors and with consulting experience to organize and head estimating.

P-9002, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ESTIMATOR-ENGINEER WANTED

A fine job opportunity for a young engineer with estimating experience. Opportunity includes estimating, job expediting, checking shop drawings and some design.

Southern New England Contracting Co.
66 Sanford Street Hartford, Connecticut

CONSTRUCTION SALES ENGINEER

Leading Plastics Manufacturer Seeks Executive of $20,000. a yr. calibre to sell construction field. Commission.

SW-9513, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

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The advertising rate is $25.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.
AN ADVERTISING INCH is measured ⅞ inch vert. on one col., 3 columns—30 in. to a page.
EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

UNDISPLAYED RATES

$2.40 a line, min. 3 lines. To figure advance payment count 5 average words as a line.

BOX NUMBERS count as one additional line in undisplayed ads.

DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads.

WANTED
24" Gauge Storage Battery
LOCOMOTIVES
1½ to 2 Tons and 4 to 5 Tons.
W-9395, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

SEARCHLIGHT Equipment Spotting Service

This service is aimed at helping you, the reader of "SEARCHLIGHT", to locate Surplus new and used Engineering and Construction equipment not currently advertised. (This service is for USER-BUYERS only). No charge or obligation.

How to use: Check the dealer ads to see if what you want is not currently advertised. If not, send us the specifications of the equipment wanted on the coupon below, or on your own company letterhead to:

Searchlight Equipment Spotting Service
c/o ENGINEERING NEWS-RECORD
P. O. Box 12, N. Y. 36, N. Y.

Your requirements will be brought promptly to the attention of the equipment dealers advertising in this section. You will receive replies directly from them.

Searchlight Equipment Spotting Service
c/o ENGINEERING NEWS-RECORD
330 W. 42nd St., N. Y. 36, N. Y.

Please help us locate the following equipment components.

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NAME .....
TITLE .....
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STREET .....
CITY 12/18/58

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• CONTRACT WORK WANTED

Engineering group available for studies, design, detailing or contractor's services. CWW-9528, Engineering News-Record.

• SPECIAL SERVICES

General Drafting Service.—Valuable restorations capably redrawn. Efficient, accurate, dependable drafting service. P.O. Box 1886, Pittsburgh 30, Pa.

Construction Surveys and Estimates, All Trades. Experienced, fast service on large and small contracts. Chas. M. Walker, B.S. R.E. Ph. FI 6-0647, 114½ E. Univ. Ave., Champaign, Ill.

• BUSINESS OPPORTUNITY

Road builder with tax loss carry forward of approximately $3,000,000 will sell an established well regarded construction business. For full particulars write BO-9469, Engineering News-Record.

• WANTED

Anything within reason that is wanted in the field served by Engineering News-Record can be quickly located through bringing it to the attention of thousands of men whose interest is assured because this is the business paper they read.

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OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Exams
Forty eighth year
WILSON *Engineering Corp.*
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Front drum, 42,000 lbs line pull. 2 rear drums, 35,000 lbs each line pull. Cylinders 12 inches by 12 inches. Price Right.
FS-9505, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

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BAILEY BRIDGE EQUIPMENT CO.
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One (1) Fully Automatic Central Mix Concrete Batch Plant—1 year old—for mixer trucks & Concrete Buckets.
FS-9279, Engineering News-Record
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Piece of Floating Equipment
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Open Scow "SENSEN"—80' x 28' x 8' of sound wood construction, well maintained and believed to be in sound seaworthy condition.
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One cylindrical welded iron water tank (below decks) 4'8" x 23' of 3000 gallon capacity.
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Double drum chain driven hoisting gear in excellent working order.
Deck construction suitable for location of "A" frame, smaller type goose neck crane, or caterpillar tread crane.
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Can furnish complete with hoist—gas. or electric.
Special rates on long term rental.
Call for complete figures on your material handling problem.

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FULL REVOLVING FLOATING CRANE "HARBOLD"

capacity 65 tons at 50' radius
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steam power, air controls
4 drum hoist
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GOOD USED EQUIPMENT

650-B Bucyrus Erie Elec. Drag, 195', 18 yd.
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621-S Page Diesel Drag, 125', 7 yd.
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5-W Bucyrus Erie Diesel Drag, 100', 6 yd.
2400 Lima Dragline, 130', 5 yd.
4500 Manitowoc Drag, 120', 5 yd.
3900 Manitowoc Speedcrane, 100' boom
3500 & 3000 Manitowoc Crawler Cranes
111-M Marion Drag, 80', 4 yd.
1055 P&H Drag, 80', 3½ yd.
1201 Lima Dragline, 85', 3 yd.
54-B Bucyrus Erie Drag, 80', 2½ yd.
5560 Marion 26 yard Elec. Shovel
750-B Bucyrus Erie 20 yd. Elec. Shovel
5480 Marion 18 yd. Elec. H.L. Shovel
170-B Bucyrus Erie 6½ yd. Elec. Shovel
120-B Bucyrus Erie 4 yd Elec Shovel
111-M Marion 4 yd Standard Shovel
54-B Bucyrus Erie 2½ yd. Standard Shovel
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Large selection of smaller Shovels and Draglines available
Model T-750 Reich Truck Mounted Rotary and Down-the-Hole Drill
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Euclid Trucks—Rear & Bottom Dump
Truck Cranes, Dozers, Scrapers, Front End Loaders, Drills, Buckets, Attachments and other Misc. Equipment Available

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Other lengths and sections at various locations. Storage yards at CHICAGO, BUFFALO & MEMPHIS.
Also 10" x 42# and 12" x 53# BP 60' in stock.

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CLOSE OUT! TANK TRAILERS!
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48B Bucyrus Erie Shovel diesel 2 cy
10,000' 9" x 9" road forms
1,550' 8" x 8" road forms*
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*Used four months only

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3700 PCS. BETH. SP6A, 65' 50' 56' & 48' & 40'
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447 PCS. BETH.—AP3 25 & 30, 40 & 60 FT.
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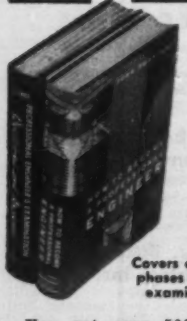

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CLASSIFIED ADVERTISING INDEX

Albert Pipe Supply Company 94
Amerlux Steel Products Company... 94
Associated Pipe & Fitting Co..... 94

Baker, Jr. Inc. Michael..... 92
Bailey Bridge Equipment Co..... 93
Boers Equipment Company, Gil..... 92

Conmaco, Inc. 94

Drachman Steel Corp., Hy..... 94

Equipment Corp., of America..... 94

Gurley, W & L. E..... 93

Harza Engineering Company..... 92
Havre De Grace Shipyard Inc., The.. 94
Hanson, Paul 93

Memphis Equipment Company..... 94
Midwest Steel Corporation 93
Mississippi Valley Equipment Co..... 94

Odom, J. M. 92

Southeastern Forest Experiment Station 92
Southern New England Contracting Co., The 92
Stanhope Inc., R. C. 94
Sverdrup & Parcel, Inc. 92
Swabb Equipment Co., Inc., Frank.... 94

Tamblyn System 93
Trifero, D. James 93

Williams Construction Company..... 94
Wilson Engineering Corporation 93
Wright & Cobb Lighterage Co., The.. 93

ADVERTISERS IN THIS ISSUE

Acker Drill Co., Inc. 99
Allis Chalmers Mfg. Co. Const. Mchry. Div. 1
Allison, Div. GMC 60
American Oil Company 15
Armco Drainage & Metal Prod., Inc. ..2nd cov.
The Asphalt Institute 74-75
Austin Western Works, Construction Equip. Div. Baldwin-Lime-Hamilton Corp. 58-59

Bethlehem Steel Co. 29; 49-52
Borden Metal Products Co. 20
Broderick & Bascom Rope Co. ..... 4th cov.

Charles Bruning Co., Inc. 99
Clayton Mfg. Co. 46
Concrete Reinforcing Steel Institute 36
Continental Motors Corp. 32

Deming Co., The 48

Eastman Kodak Co. 57
Elgood Equipment Corp. 61

Firemen's Fund Insurance Companies 72
L. B. Foster Co. 6

Garrett Corp. 79
General Motors Corp. Truck & Coach 30-31
M. Greenberg's Sons 70
Griffin Wellpoint Corp. 46

International Steel Co. 84

Johns Manville Corp. 37

Layne & Bowler, Inc. 10
Lead Industries Assn. 9
Lehigh Portland Cement Company 47
Lock Joint Pipe Co. 16

R. C. Mahon Co. 64-65
McKinney Drilling Co. 62
Moretrench Corp. 61
Mueller Co. 8

National Clay Pipe Manufacturers, Inc. 54

Peerless Pump Div., Food Mchy. & Chem. Corp. 66
Penn Metal Company, Inc. 43
Permacrete Products Corp. 61
Portland Cement Association 11

Republic Steel Corporation 38-39
Richmond Screw Anchor Co. 2
Rockwell Standard Corp., Universal Joint Div. 7
John A. Roebling's Sons Corp. 14
Russell, Burdsall & Ward Bolt & Nut Co. 33

Servicised Prod. Corp. 87
Signode Steel Strapping Co. 56
Sika Chemical Corp. 42
Smith Engr. Works 18
Socony Mobil Oil Co., Inc. 27
Sonoco Products Co. 76-77
Spencer, White & Prentis, Inc. 62
Sprague & Henwood, Inc. 71
Steel Joist Institute 60
Stoody Co. 63

E. A. Thompson, Inc. 53

U. S. Steel Corp. 3-5; 13; 73

Vulcan Materials Co. ..... 3rd cov.

Professional Services 95-98

CLASSIFIED ADVERTISING
F. J. Eberle, Business Mgr.

Employment Opportunities 91, 92
Notices
Proposals 88-90
Equipment
(Used or Surplus)
(For Rent, Sales Wanted) 93, 94
Advertisers' Index 98

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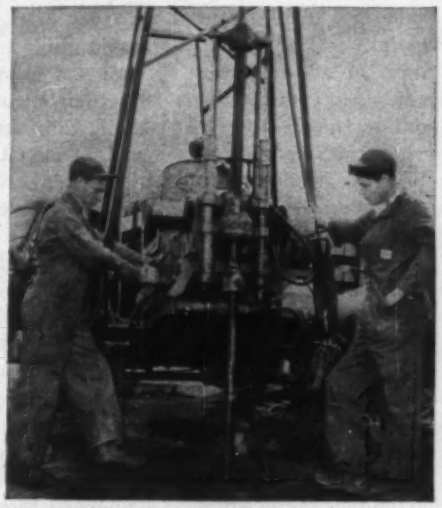

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Failure Probed Properly

EVERYONE CONNECTED WITH the investigation of the erection falsework failure on the Second Narrows Bridge in Vancouver, B.C., deserves high praise and thanks from the entire world's construction fraternity.

Within less than six months after the accident, the Royal Canadian Commission, appointed to conduct the investigation, has announced its findings (ENR Dec. 11, p. 21). They are clear, definite and conclusive as to cause—improper design of the upper grillage supporting the erection bent. The findings also point the way to guard against—if not eliminate with absolute certainty—similar errors in the future.

The prompt and altogether properly conducted probe of the Vancouver bridge failure resulted because everyone cooperated wholeheartedly. Particular praise in this regard is due the contractor, the Dominion Bridge Company, which made no effort to sidestep its responsibility —indeed ferreted out the cause and admitted it even before the hearing.

In this connection, it should be pointed out, in fairness, that the wording of one of the findings of the Royal Commission may seem to imply that the design of the grillage was intrusted to inexperienced personnel, whereas in the company's testimony at the hearings it was stated that the design was done by a qualified engineer whose calculations were checked by one of the most experienced engineers in its employ. A mathematical error was made, and it was not caught.

The lesson is plain: Human errors are possible regardless of experience, so that constant vigilance in design is the watchword. Dominion Bridge, which has successfully built over 3,000 bridges in its 76-year life, suffered the unfortunate fate of having to prove the lesson. To its credit, however, it also laid the lesson bare for all to profit.

New Vistas in Engineering

ENGINEERS who view high-speed digital computers merely as machines for speeding up calculations may be in for a shock. There is evidence that the impact of these electronic brains on engineering practices is becoming deep-seated and widespread.

To make effective use of computers, engineers are finding they have to revamp their organizations—expand in some directions, curtail in others. They have had to add a computer section comprised of mathematical analysts, programers, coders and machine operators, but they may have had to lay off some draftsmen and slide-rule pushers. They have had to learn how to communicate with and control computers. Many have had to become familiar with hitherto obscure mathematical techniques, such as matrix algebra and numerical analysis. And they have had to find out how to make efficient use of computer output, because computers are costly.

But these are developments that could have been expected. What is surprising is that the high-speed computers are compelling engineers to take new approaches to their problems—in structural design, highway planning and pipe network layout to mention a few.

A good example is the change taking place among structural engineers, which was plainly evident at the ASCE Conference on Electronic Computation in Kansas City (ENR Nov. 26, p. 28). These engineers find they don't have to restrict use of the computers to repetitive solutions of formulas; they can get the machines to turn out complete designs and stress analyses. Furthermore, they now find it expeditious to use methods too laborious for slide rules and desk computers—for example, slope-deflection equations instead of the moment distribution process.

Perhaps even more important, structural engineers have learned that they now can design and analyze structures for which theoretical treatment previously was impractical. For example, they can calculate deflections and primary and secondary stresses in trusses on the high-speed computers almost as easily as they can determine the primary stresses alone; they can proportion structural systems for minimum weight or cost; they can compute the behavior of multistory structures under dynamic loads; they can analyze space frames and thin shells. Engineering subjects hitherto ignored or neglected are now coming to the fore.

Recognizing the changes computers are bringing about in engineering practices, educators are now pondering what revisions in college curricula are necessary. Will they merely have to shift emphasis in existing courses, or are radical changes necessary? Will college courses have to be lengthened to accommodate computer techniques, or perhaps summer vacations abandoned?

Before long, the effect of computers will be felt at college level, as well as throughout professional practice. And engineers will be looking at engineering from a completely different viewpoint. Computers are opening new vistas.

Jobs and Machines

AN INTERESTING AFTERMATH of the recession is that, between April and September, factory output recovered 63% of its previous loss, while man-hours worked recovered only 47% and employment only 35%.

Two possible reasons for these differences are that manufacturers found they had over-staffed during the boom period, or that they have in the meantime installed more machinery. The latter reason makes better headlines; and one recently read, "Machinery Is Costing Jobs." The fact is, of course, as the great growth of the U.S. proves, that machines do not destroy, but make jobs—new ones and better ones.

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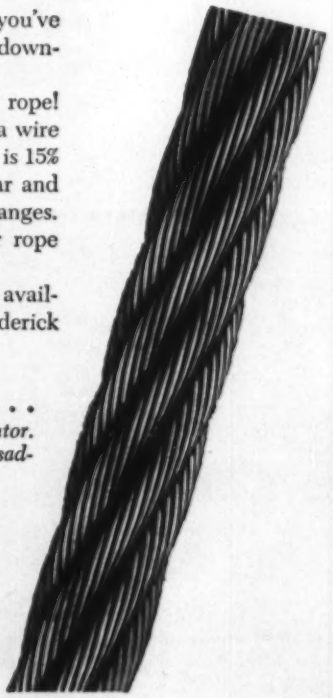
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